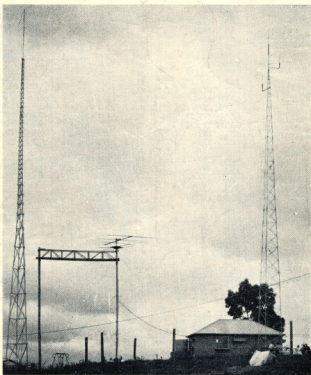


# AMATEUR RADIO

MARCH 1963



Vol. 31, No. 3



2/-

Registered at G.P.O., Melbourne, for  
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6X5	15/-	VR105	10/-
6Y6	5/- 5 a £1	VR136	2/- 12 a £1
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7C5	5/- 5 a £1	VT25	5/-
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7E6	3/6 7 a £1	VT127	4/11 5 a £1
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# "AMATEUR RADIO"

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VK3WI: Sundays, 1100 hours EST, simultaneously on 3573 Kc., 7146 Kc., 50.16  
Mc. and 145.13 Mc.; intrastate call-backs  
taken on 7050 Kc. VHF 1000 hours EST  
on 50.16 Mc. and 145.13 Mc.; call-backs  
taken on 2 metres.

VK3WI: Sundays, 1000 hours EST, simultaneously on 3602 Kc., 7146 Kc., 50.5  
Mc., 144.3 Mc. (a.m.), and 145.85 Mc.  
(f.m.); 2005 hours EST, 3602 Kc. and  
144.3 Mc. intrastate hook-ups taken on  
3602 Kc.

VK4WI: Sundays, 0900 hours EST, simultaneously on 7146 Kc. and 14.342 Mc.  
Intrastate hook-ups taken on 7105 Kc.

VK5WI: Sundays, 0900 SAT, on 7146 Kc.  
Relays on 3.7, 14.3, 50.02, 144 and 268  
Mc. Intrastate hook-ups taken on 7125  
Kc.

VK6WI: Sundays at 0930 hours WAST, on  
7146 Kc. Intrastate hook-ups taken on  
7085 Kc.

VK7WI: Sundays at 1000 hours EST, on 7146  
Kc. and 3673 Kc. Intrastate hook-ups  
taken on 7115 Kc.

## ★ OUR COVER

Looming high on a hill at Ballarat  
(Victoria) there are a series of aerial  
towers, between which are Sterba  
curtains, which imply the location of  
a commercial broadcaster; such is not  
the case. This most impressive  
array is the joint property of VK-  
3HW and VK3AMH.

In a later cover photo will be  
shown the equally impressive station  
set-up, which would rank with any  
Amateur station, irrespective of  
location.

## FEDERAL COMMENT

★

### PROGRESS OF YOUTH

For many generations as the world has progressed man as the more  
experienced being has taken an interest in youth, trying—and with great  
success—to provide for him the opportunities which man himself missed  
through circumstances either beyond his control or which he did not grasp  
when opportunity presented itself.

This success is evidenced by the younger age of men holding responsible  
positions in government, in industry, in the municipalities of large  
cities, in provincial towns, in commerce, in schools and universities, in  
science laboratories—in fact in every walk of life where man employs  
himself in the age-long toil for existence. Such success has not just  
"happened" but is the direct result of man's interest in youth, in passing  
on to the younger generation the knowledge and experience he himself  
has gained over a longer span of life.

As the world entered the technological era youth was first presented  
with known facts then left with unsolved problems. Gradually youth met  
the challenge of his forbears and took an interest in matters previously  
left to the older man. Educational standards rose until today youth has  
opportunities unthought of a mere few decades ago.

With the dawn of the space age greater and greater call is made upon  
youth to tackle the technical problems involved in a venture so gigantic  
that it is sometimes beyond the comprehension of older people. Radio,  
which itself was a miracle five decades ago, is being supplanted by technological  
progress undreamed about when radio was in its infancy. And yet,  
despite the wonder of it all, the basic concepts of radio are the  
fundamentals of this great new adventure.

For youth today the study of radio and its principles is the first step  
to wenders yet unknown. It is the first step to be encouraged by man in  
his efforts to give to youth what he himself might have missed or only  
partly entered into. Never before has such a challenge been extended to  
youth as this challenge to explore the never-ending world of electronics.

In pursuit of this thinking the Wireless Institute of Australia is promoting  
the growth of a Youth Radio Club Scheme throughout Australian  
Schools. Already some thirty such clubs are in existence, bringing to youth  
at a bright young age the opportunity to take that first step towards the  
challenge of exploring the technical world ahead, and in so doing assist  
them in science, mathematics and other subjects so important in the  
technological advancement of their country.

By every means we have at our command we should support and  
encourage such a scheme for the advancement of youth into the field in  
which we ourselves are so interested, a field in which our sons will be the  
scientists of tomorrow.

Elsewhere in this issue of your magazine is a call for those used or  
unwanted pieces of radio equipment—capacitors, sockets, valves, resistors  
—which will be wanted by the youths who take an interest in the Youth  
Radio Clubs. From these boys will come the Amateurs, who, like hundreds  
of those before them, will fill the technical posts in this young country of  
Australia which is surely taking up its important role in the technological  
advancement of the world.

The Institute asks you to DO your part, not just THINK about it!  
Follow the instructions elsewhere in this magazine and send that unwanted  
equipment to your Division so that youth can gain the early knowledge  
so essential in this rapidly evolving world of electronics.

FEDERAL EXECUTIVE, W.I.A.

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# Build a Multi-Band Bandspread Receiver\*

## USING COMMAND 3-6 Mc. SET AS BASIS

LUTHER UYS, ZS6E

**A**FTER 10 years of mobile work I have found that the transmitting side of it presented no difficulty whatsoever, but the receiving end has always been a "pain in the neck".

Having tried about ten different types—with converters (both commercial and home-built), I found that they all fell far short of the "shack" standard. There was no bandspread, no selectivity and no noise limiters; in short, no reception if the signal was less than "9 plus".

This inspired, or rather, forced me to build something to meet my requirements.

The Command receiver is well known for its fantastic reception; but falls short on these points:—

- (1) Single band receiver.
- (2) No bandspread.
- (3) Broad i.f.s. (Not BC453).

The following is a step-by-step procedure to overcome these and other shortcomings.

### STEP-BY-STEP PROCEDURE

1. Remove: bottom and top covers; all valves; all i.f. cans; r.f./mixer/osc. unit at bottom.

2. Rewire filaments to suit and replace with 6 volt valves if required, but leave 12SR7 detector valve until later.

3. Cut away wires at back and leave only h.t. filament, and pick up r.f. gain wire, i.e. pin No. 3 on back plug, pin No. 1 on front plug and insert 10K pot. on front for r.f. gain control.

4. Pick up b.f.o. shut-off wire, i.e. pin No. 4 at back or pin No. 5 front plug, and insert switch to ground.

5. Cut away existing output transformer, i.e. T1 and replace with universal output transformer. Refer to main and sub-schematics.

This brings the main or normal modifications to an end (which most of you must have done already if your receiver is working).

The following steps are radical changes and must be followed to their logical conclusion, there will be no turning back.

6. Identify r.f./mixer/osc. sections thus: rx upright, then the antenna terminal will be at the left. From left to right you will find r.f./mixer/osc. at the bottom, each one being under its section of the main tuning condenser C4A, B and C.

Also, the r.f. coil has a red dot and will henceforth be referred to as L1; the mixer coil has a yellow dot and will be referred to as L2 and L3; and the oscillator coil has a blue dot and will be referred to as L4 and L5.

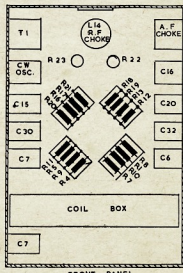
7. Make a good note of step 6, because you will be constantly referring back to it when studying these coils more closely.

● This article details, in an easy step-by-step manner, how a satisfactory mobile receiver can be made from the Command receiver having efficient bandspread, good selectivity, and effective noise limitation. Each step is carefully detailed for the constructor wishing to duplicate the author's work.

8. Remove the rx cover at the top of the unit. This will expose the r.f. (C4A), mixer (C4B), and oscillator (C4C) tuning condenser, i.e. your main tuning condenser. Observe the points of connection of the plug-in unit and count the pins clockwise.

- 9(a). Resolder: (a) r.f./C4A stator wire from pin 4 on to pin 5. (b) Mixer stator wire of C4B from pin 4 on to pin 5. See that the 100 pF. condenser remains in position. (c) Oscillator stator wire of C4C from pin 4 on to pin 6.

- 9(b). Remove: (i) The padder and trimmers (the unit as a whole) from the oscillator condenser C4C and replace with a good quality 0.01  $\mu$ F. condenser to ground. (ii) All trimmers on top of C4A and C4B, i.e. two on each section. (iii) The existing antenna lug.



### Underneath the Chassis.

View of receiver, inverted, and with front panel towards you. There are several other resistors and condensers not shown in the above diagram, but they are easily identifiable by inspection.

When these steps have been completed, close up the top section and turn the receiver upside down.

Now, counting the pins anti-clockwise.

10. Remove the green wire from pin 6 of the oscillator plug to the cathode of the mixer and insert a 5K resistor from pin 1 of this plug to the cathode of the mixer.

11. Remove all the 5K resistors from the oscillator coils—both the existing one and any new ones you may have scrounged—because step 10 will have taken care of this circuit.

This completes the wiring modification to the receiver side of the r.f./mixer/osc. unit. All other modifications to these sections will now be done on the plug-in units.

At this stage we will get the i.f.s. in order that you can test as soon as you get the r.f./mixer/osc. plug-in unit going.

### I.F. MODIFICATION

If the receiver you have is one with a sharp i.f.—Bob's your uncle, and nothing is required to be done. The i.f.s. should be no sharper than 455 kc. 700 kc. will also do.

12. Obtain three 455 kc. modern high-gain i.f. cans, e.g. the types that are used on a.c./d.c. sets 118-0-12, using 1655-1 in the 1st i.f., 1655-1 in the 2nd i.f., and 1655-7 in the 3rd i.f. I used these and my modifications are based on them.)

13. Open the Command i.f. cans and cut the four pillars away with a hacksaw, strip the wires away from the pins and thus leave the plug-in unit free.

14. Enlarge the centre hole of the plug-in unit with a 3/16" drill, this will enable you to adjust the bottom slug of the i.f. can through the hole.

15. Now it is advisable to remove and replace all the existing 0.05  $\mu$ F. metal canned condensers that obstruct the bottoms of the i.f.s. with 0.05  $\mu$ F. paper condensers, making sure that you mount them in such a position that you can get at the bottom slug of the i.f. with a tuning stick.

16. Drill a 3/16" hole into the baseplate of the i.f. can by first plugging in the i.f. and then drilling through, as described in step 14.

17. Mount the new i.f. cans inside the stripped Command i.f. cans, making sure that—

- (a) Plate pin 4 of the new i.f. is connected to pin 1 of the plug-in unit.
- (b) H.t. pin 3 of the new i.f. is connected to pin 2 of the plug-in unit.
- (c) Grid pin 1 of the new i.f. is connected to pin 5 of the plug-in unit.
- (d) A.v.c. pin 2 of the new i.f. is connected to pin 6 of the plug-in unit.

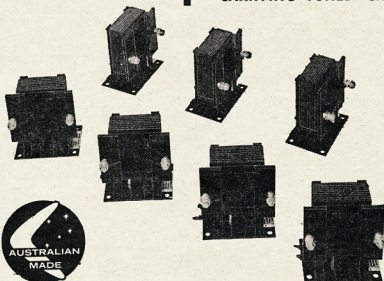




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Part of the range of Stopper Circuits developed as a joint project with Email engineers to carry 50 c.p.s. mains voltages at up to 200 amperes, whilst presenting a high impedance to low level audio frequency pulses used for remote switching of off-peak equipment. A wide range of Stopper Circuits and Chokes has been produced by Telecomponents over the past two years.

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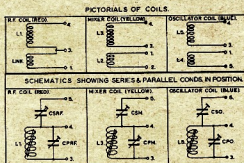
27. Mount coil-formers L1 to L5 between pins 6 and 1. In other words,

31. Remove the 12SR7 and replace with a 6SN7, balancing the filaments of the 6SN7 and 6H6 if 12 volt filament supply is used, making sure that the 6H6 has an extra resistor across its

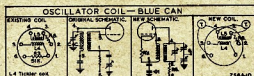
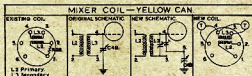
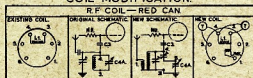
Follow the schematic, which is self-explanatory. For those who may have difficulty in following it, we will continue with the step-by-step instructions.

**Note.**—Use 3-30 pF. Phillips beehive trimmers fixed values as required, e.g. 80 mx.

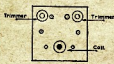
34. Insert a 0.01  $\mu$ F. condenser on the tag strip where R19 used to be and earth the other side.



### COIL MODIFICATION



NOTE:- ALL COUNTING IS DONE ANTI-CLOCKWISE LOOKING FROM INSIDE THE COIL  
CAY, i.e. LOOKING AT THE PINS.



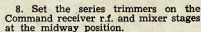
## PICTORIAL

B.F.O. STAGE.

38. Run a copper shield between the pins of the 6H6, i.e. from pin 1 to pin 6 and earth both pins.



7. Couple an output meter to the cathode of the last i.f. valve or the loudspeaker terminals. (An audio note must be on the input signal.)



9. Tune the r.f. and mixer stages with the parallel trimmers for maximum output.

10. Set the v.f.o. at 7300 kc. and peak the series trimmers. Repeat steps 9 and 10 until the output remains at its maximum across the entire band.

11. Peak the i.f.s. at top and bottom and if self oscillation is experienced when peaking these i.f.s., damp the primary of the last i.f. with a 50K to 100K resistor as described in step 18. ●

As the receiver is now a bandspread model for Amateur bands only, the usual signal generator is not accurate enough. Use the following equipment:

- (a) A frequency standard, e.g. BC221.
- (b) The shack receiver must be equipped with a b.f.o. (if it is possible two receivers will make matters much easier and quicker, the one set high and the other low).
- (c) Station v.f.o.
- (d) Output meter.

1. Set the first receiver with the BC221 455 kc. above the low end of the band, e.g. 7455 kc. and the other receiver 455 kc. higher than the top end of the band, e.g. 7755 kc.

Band	80		40		20		15		10	
	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.
Local Oscillator	3,455	4,455	7,455	7,755	14,455	14,755	21,455	22,455	28,455	30,455
Dial Position	3,000	4,000	7,000	7,300	14,000	14,300	21,000	22,000	28,000	30,000
Peak Osc. Trimmer	P.	S.	P.	S.	P.	S.	P.	S.	P.	S.
LINE-UP R.F. AND MIXER										
Peak R.F. Trimmer	P.	S.	P.	S.	P.	S.	P.	S.	P.	S.
Peak Mixer Trimmer	P.	S.	P.	S.	P.	S.	P.	S.	P.	S.
R.F. Signal and Dial	3,000	4,000	7,000	7,300	14,000	14,300	21,000	22,000	28,000	30,000

Note: L. (Low) is maximum capacity, i.e. fully clockwise.

H. (High) is minimum capacity, i.e. fully anti-clockwise.

P.—Parallel trimmer condenser. S.—Series trimmer condenser.

When the above has been completed, calibrate the dial in kilocycles

43. Insert a 220K resistor from pin 2 of the 6SN7 to C32 (h.t. line).

2. Turn C4 (the main tuning condenser) to maximum, i.e. clockwise. This will be the 7 Mc. position and mark this position on the dial.

3. Zero beat the local oscillator of the Command receiver against receiver No. 1 by adjusting the parallel trimmer.

4. Turn C4 to minimum, i.e. anticlockwise. Mark this position on the dial as 7300 kc.

5. Zero beat on receiver No. 2. Repeat steps 3 and 5 until perfect tracking is obtained and then leave the local oscillator severely alone.

6. Set the v.f.o. with the BC221 on  
7 Mc.

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- ★ Any composite equipment in good condition for scrapping for useful parts.

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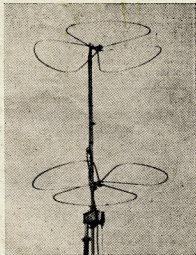
# THE BIG WHEEL ON TWO\*

## Improved Omnidirection Coverage on 144 Mc. with Horizontal Polarisation

ROBERT H. MELLEN, WIJD

and

CARL T. MILNER, W1FVY



FOR the two-metre buff, here is a new omnidirectional cloverleaf antenna with horizontal polarisation. Large size results in improved bandwidth and coverage over the popular halo, and gives superior anti-flutter properties in mobile operation. Singly or stacked, the Big Wheel is also a boon for local work from the home station.

Anyone who has been involved in local two-metre net operation knows that there are many times when the directivity of a beam antenna is a handicap, and some of its gain could be profitably sacrificed for good omnidirectional coverage. For the mobileer, an omnidirectional radiation pattern is a must. For him, there is only the choice of sticking with the vertical whip or, if he wishes to avoid cross polarisation with the rest of the fraternity, graduating to the halo or turnstile. In any event, there is a good case for the horizontally polarised omnidirectional antenna on two metres. The question is only what type best serves the purpose.

Halos and turnstiles are surely steps in the right direction. The halo, particularly, has one marked disadvantage.

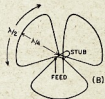
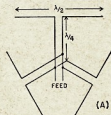


Fig. 1.—Development of the Big Wheel started with three half waves in phase, as shown at A. Despite poor matching initially, this configuration showed promise and evolved into the cloverleaf style at B. Each element of the cloverleaf is one wavelength long. Feed impedance is brought to 50 ohms through the use of a tuning stub.

It satisfies the polarisation requirement and has a fairly good pattern, but it suffers from small "capture area." This means less bandwidth and gain, and worse mobile flutter characteristics than are possible with antennae of larger size. The turnstile is somewhat better, but it is still a small antenna.

To study possible advantages of large size, we started experimenting with the old three-half-waves-in-phase type. This is a simple arrangement of three horizontal dipoles in a circle, fed in phase at the centre, as shown in Fig. 1A. Illustrations of this antenna are found in the literature but design details are lacking. This turns out to be a problem since, due to mutual coupling, both impedance and resonant frequency depend on the geometry. Thus the usual dipole formulae do not apply. Results of early tests of crude models of this antenna showed great promise, particularly for mobile use, despite poor matching.

The design shown here evolved not so much from trying to improve the matching properties, but simply to try something new. Instead of using the centre-connected transmission line, we decided to support the elements by feeders at each end instead of at the centre, as shown in B in Fig. 1. This proved to be a fortunate choice, as it resulted in simpler construction, better mechanical stability, and more easily adjustable electrical properties. Now, each element is a full-wave loop, and it can be bent to try out various shapes and diameters. The idea is the same as before, however. The half-wave portions of the loop at the rim serve as radiators, while the radial portions at each end serve as quarter-wave feeders. Don't try to figure out where one ends and the other begins!

In designing this antenna, the first step was to settle on the shape of the elements. Various configurations were tried ranging from the most compact arrangement, a wheel consisting of three pie-shaped elements with an over-all diameter of about three feet, to a huge cloverleaf with oval-shaped elements and an over-all diameter of almost five feet. As a result of these experiments, we found that compactness makes matching and current equalisation troublesome. Curiously, the radiation pattern is only slightly affected by the shape. For each of the elements there always remains a slight "front-to-back" ratio, roughly 3 db. Variations in the

pattern of this amount are barely noticeable in ordinary use. This observed pattern is shown in Fig. 2.

The next step was to trim the elements to length and adjust the stub for best s.w.r. at the desired frequency. Since all elements are fed in parallel at the low-impedance point, the input impedance would normally be quite low. Each has a radiation resistance of about 30 ohms in this configuration, which would give only 10 ohms for the parallel combination. To match to a 50-ohm line, the conventional stub-tuner scheme was used. Element lengths are chosen so that the impedance is capacitive and the circuit is then tuned to resonance with an inductive stub to give an input impedance of 50 ohms at the centre frequency.

The design described here has an over-all diameter of four feet. It is no more critical or difficult to build than a three-element beam. Elements are made of 3" o.d. corrosion-resistant aluminium tube. The lengths are bent cold to the shape shown in Fig. 3. For

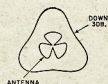


Fig. 2.—Performance of the cloverleaf array. Frequency response can be controlled over a wide range, depending on the shape of the elements and over-all size. The configuration described is usable over the entire band if centred near 146 Mc. There is a slight dip in the radiation pattern in back of each notch in the cloverleaf, but this is hardly noticeable in ordinary operation. In mobile work it is insignificant.

\* Reprinted from "QST," Sept., 1961.

good performance over the band, 80" lengths are used. The bracket and remaining hardware are prepared according to Fig. 3, and the elements mounted. Wood dowels are used to plug the element ends to provide strength and seal against moisture. The tuning stub is then cut to 5" over-all length, bent to shape and mounted as shown. Finally, the transmission line is prepared and connected. Keep the leads short or

the s.w.r. will suffer. After assembly the structure is checked for conformity to dimensions and is ready to go.

As shown in Fig. 2, the s.w.r. should be 1.2 or better over the band. The pattern should be uniform to within  $\pm 2$  db.

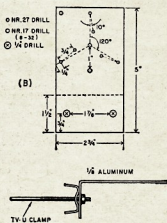
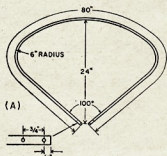
### STACKING THE BIG WHEEL

Two of these antennae can be stacked for the home station with an increased array gain of about 4 db. To improve the radiation pattern, the stacked antennae can be staggered by 60 degrees.

Stacking increases the directivity only in the vertical plane, while horizontal polarisation and the omnidirectional pattern of the single antenna are preserved. This type of array is widely used in f.m., t.v. and beacon applications, where such properties are required. With the broad bandwidth and uncritical behaviour of the Big Wheel, it is not difficult to realise considerable stacking gain by adding more bays before reaching the point of diminishing returns. In fact, results can be achieved in all directions which compare favorably with a small beam in its best direction.

for coaxial line a full wavelength is about 53", due to the propagation factor of the line. The length of the coax is important, as both matching and phasing depend on it. The spacing is nominal, however, and it can be adjusted to make the phasing sections fit properly.

The arrangement for a two-bay antenna is shown in Fig. 4. A full wavelength of RG-11/U 75-ohm coax is used for the phasing section. It is driven by 50-ohm RG-8/U transmission line at a point  $\frac{1}{4}$  wavelength up from the bottom, to achieve proper impedance transformation. The two ends of the coax are out of phase, so one of the bays must be turned upside down to put the antenna currents in phase.



The 2-metre Big Wheel for mobile or fixed-station use.

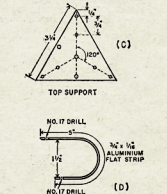


Fig. 2.—Structural details of the Big Wheel 2-metre array. One element is shown at A. A wood dowel 2 inches long is driven into each element to add strength. The grounded lower support is shown at B. It is bent down at a right angle to permit mounting to a vertical pipe with a t.v.-type U clamp. The triangular top support is shown at C, and the tuning stub at D. The array is fed with 50-ohm coax, the inner conductor of which is connected to the upper support. Brass screws (3/4 inch 6-32) are used to assemble the parts.

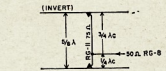


Fig. 4.—Stacking method for two Big Wheel antennas. Because of the propagation factor of coaxial line, an electrical full wavelength of coax is approximately  $\frac{1}{2}$  wavelength long. This is the optimum stacking dimension for dipoles. By using a 75-ohm phasing line the system may be fed at the point indicated with a 50-ohm transmission line. Note that one bay must be inverted to keep antenna currents in phase.

When the original 5" stubs were used, it was found that the point of minimum s.w.r. had shifted from 146 to 148 Mc., due to coupling between the bays. This was corrected by increasing the stub length from 5" to 6" total length. The resulting s.w.r. curve is almost identical to that of a single antenna. With the bays staggered 60 degrees on the mast the pattern variations are negligible. Gain is approximately 4 db. over a dipole.

For both mobile and fixed station, the Big Wheel has performed beyond our fondest hopes. Mobile results are particularly astonishing, as the troublesome rapid flutter is remarkably reduced. Our best testimonial was the occasion when one operator said he could not believe that such a strong, steady signal was coming from a moving car at such a great distance. At home it's a pleasure to be able to hear everyone in the Shoreline Net without continually fussing with a rotator.



### SAD STORY OF C.H.C./H.T.H.

Overheard recently one W telling another that he earned his H.T.H. Award in 1 hour 30 minutes flat during a C.H.C.'s get-together in the States. I have no doubt that Cliff Evans, K5BXB, had high ideas and aims for this brainchild of his, but with the advent of so many Station C.H.C.'s, the award from the point of view of "standard of attainment" is at an all-time low.

For those who like to belong to "socials," it is no doubt a "worthy," but from a DXer's point of view it has little merit.

It is good to seek awards, but only the right ones. There are those who are obtained only by Amateur Radio's highest endeavour, and there are those who can be had for working a couple of stations and sending along 10-15 I.R.C.

There are those who provide some social status also. So let each Ham judge for himself.

Award hunting has now reached the stage where countless awards are available and it is pointless to continue stacking them into the bottom drawer.

73, Al, VK4SS, C.H.C./H.T.H.

† Extensive tests of the Big Wheel have been made by the Editor "QST", both at the home station and in the field. The single-bay cloverleaf array has given performance superior to any other single omnidirectional antenna yet tried, and the two-bay system is all that the authors claim. In portable work, particularly, it has been found that a two-bay Big Wheel brings in signals with a strength comparable to that achieved with small Yagis, yet it delivers this performance in all directions and over a wider frequency range than is obtainable with parasitic arrays. Tests are currently underway with a four-bay system and results will be reported at a later date. —WIHQD.

## Performance Tests on the Big Wheel 2-Metre Array\*

### Stacking Information and Results with Omnidirectional Antennae

IN the previous article WILJD and WIFVY described a novel omnidirectional array for 144 Mc. mobile or fixed-station work. These fellows are now engaged in research in the Far North (at time of writing this), and there was not sufficient time for them to complete tests on stacked versions of the antenna before their scheduled departure, so the writer gladly took up where they left off. As is usual when one tries to get to meaningful numbers in connection with Amateur antennae (and by Amateur methods) this turned out to be no mean task.

On-the-air results are all that really count in evaluating the worth of antenna ideas for Amateurs. Precise measurement of pattern and gain are all but impossible, but if an antenna "has what it takes," protracted use of it under many differing conditions will show its superiority clearly. The "many" in the above sentence bears emphasis. Routine comparisons of various antennae can show widely different results. In fact, if they don't there is probably something wrong with the tester's methods. Reflections from ground, trees, buildings, hills, cars and the like add to or subtract from the direct signal to such an extent that "gain" figures taken by working stations and comparing signal reports show large variations from one station to the next. These are part of everyday v.h.f. communications, so the thing to do is to work many stations at various distances and directions with a given comparison set-up. Then, if you want to know how you set up again in a different location and work another bunch. This is time-consuming, but interesting if one keeps a detailed log of the results.

The writer spent many hours at this sort of thing with the Melrose-Milner Big Wheel. Tests at the WHDQ home location proved inconclusive, because of a side-hill test area, and trees, guy wires and towers in the way of anything that could be worked on readily. So, after the matching problems were worked out to our satisfaction, we took the collection of antennae and masts out to some of our favourite wide-open spots. The single-bay cloverleaf was mounted on a 15-foot mast. Two-bay and four-bay stacked arrays were tested on a 24-foot support. All were checked against the turnstile regularly used for mobile work. This put the turnstile in a seemingly unfavourable light, as it was used in its permanent position some 20' above and to the rear of the WHDQ station wagon. The turnstile had established itself as an effective mobile antenna, however, and was useful as a standard reference for checking results with the larger and higher arrays.

## RESULTS

All told around 100 different stations were worked or logged, and their signal strengths tabulated in terms of decibels above the readings obtained with the mobile turnstile. Care was taken to see that these stations were in various directions, at all possible distances, and well distributed throughout the active portion of the band. As expected, inferences from these tests varied widely, but we feel that enough of them were made so that they are valid indications of what can be expected from various versions of the Big Wheel. It should be stressed that the margin credited to the single-bay Big Wheel over the turnstile is largely the result of the former having been mounted at considerably greater height. These tests were not intended to show the relative merits of mounting a turnstile high or low, but the turnstile was used merely to provide a reference against which all other setups could be compared.

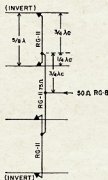


Fig. 5.—Feed system for a four-bay version of the Big Wheel 2-metre array. The two centre bays are the same side up, while the two outer bays are inverted. Rays are approximately  $\frac{1}{4}$  wavelength apart physically, which permits the use of full-wave phasing sections between them. The feed points of each pair are then fed through two  $\frac{1}{4}$ -wave phasing sections, and a 50-ohm line at the midpoint, seen as almost perfect match. The tuning stubs on the two inner bays (see previous article) are 7 inches long, while those on the outer bays are 6 inches.

The tabulation below includes only received signal strengths at WHDQ/1. Many reports were taken from stations worked, but individual S metre readings varied so widely that no numerically-useful data could be obtained from them.

Average gain, 1-bay clover- leaf over turnstile .....	5.7 db.
Average gain, 2-bay over 1-bay .....	6.2 db.
Average gain, 4-bay over 1-bay .....	8.1 db.

The "gain" obtained with the 2-bay Big Wheel appears out of line, but more readings were taken with various versions of this array than any other.

and we can assure the reader that the 2-bay version really does perform. Time and again, signals which were heard only as faint whistles with a beat oscillator with a single-bay antenna jumped up to solid voice readability on the 2-bay version. These were not included in the tabulation, as the strength of the non-readable signals could not be established readily—but they do show that a stacked Big Wheel does what everyone wants an antenna to do: it brings in signals that cannot be heard with simpler antennae. It should be emphasised, however, that these are not antenna-range measurements, and should not be interpreted as such.

The stacked versions proved to be nothing short of spectacular on signals coming from extreme distances. On one occasion a signal from a New York area station was totally inaudible if the single-bay and the turnstile, yet it was a readable S3 on the 2-bay array. This was over an indirect hilly path of some 75 miles, and the test was made around 1 p.m. on a hot summer day, when tropospheric bending was negligible. The tests made at night often showed the 2-bay array loaded with weak signals, fading into and up out of the noise, when either the 2-bay or 4-bay stacks were switched to the receiver. Tuning the band with the turnstile and single-bay antennae under the same conditions would show only the strong signals of locals and near-locals. Many contacts were made at distances up to 100 miles or so from the station. The tests of the past have shown that some form of beam is a must for raising stations at anything like this distance.

We worked hard at trying to make the stacking of two pairs of antennae pay off as much gain as did the stacking of two single bays, but this would not quite "come off." The indicated gain from the latter is more than would be expected on the basis of stacking theory, but it was there, over and over again, in unmistakable fashion. This is probably due to the nature of v.h.f. propagation, wherein lowering and narrowing of the vertical pattern pays off in surprising fashion on some paths. You get this when you begin stacking. More stacking pays off, but not so spectacularly as the first step.

But a gain of 8 db. with an omnidirectional antenna is not to be sneezed at. You'd have to put up a pretty fair Yagi to equal this and remember, the 4-bay Big Wheel gives the gain in **all directions**. This is not an unalloyed blessing, however. The stack of Big Wheels is fine for net activity and local rag-chewing, but its omnidirectional pattern and high gain can multiply QRM problems many fold. The 2-metres band is beset by a host of tetrapoles when some tropospheric bending is present. Another feature on the debit side: interference from commercial signals in the v.h.f. range multiplies with an omnidirectional array of such beautifully broad frequency characteristics. We were forced to abandon work with the Big Wheels in one favorite location where there are two radio stations, a v.h.f. tv station and various police and forestry-severe (Continued on Page 12)

\* Reprinted from "QST," Oct., 1961.



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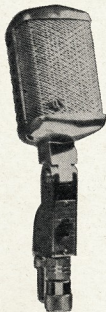
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# V.H.F. AERIAL MATERIALS\*

D. A. S. DRYBROUGH, B.Sc. (BRS22550)

MOST Amateurs interested in v.h.f. or u.h.f. operation would like to experiment with aerials, knowing that they play a very important part in the overall performance of a station. However the availability of cheap and effective commercially-made beams may well have discouraged some from taking up this aspect of station design, especially where a fair amount of "plumbing" appears to be involved. Not everyone thrives on the bending, shaping and fixing of aluminum tubing, such as is called for in most v.h.f. or u.h.f. aerial designs, and it is the purpose of this article to point out that such skills are not really necessary because other, more easily handled, and cheaper materials can be used for most aerial experimental work at these frequencies.

The idea of using other materials occurred to the writer during a visit to the Lichfield I.T.A. station some years ago when the engineer-guide showed the party a spare element for the aerial then in use. It was galvanised! If such a finish was considered suitable for a high power v.h.f. tv. aerial, then it would surely be worth investigating for Amateur use. A check was therefore made into the relative merits of various materials for use as v.h.f. aerial elements with interesting and cheering—results.

The radiating efficiency of an aerial can be defined as the ratio of the power radiated by it to the power supplied to it and is sometimes quoted as a percentage. The difference between the radiated power ( $P_r$ ) and the input power ( $P_{in}$ ) is the power lost in the aerial itself ( $P_l$ ). The aerial can therefore be given the equivalent circuit shown in Fig. 1 (b) because power in such a circuit can be lost only in a resistive element and both power-dissipating mechanisms in the aerial can be replaced by resistors,  $R_r$  and  $R_l$ , such that together they dissipate the same total power as the actual aerial does.  $R_r$ , proportional to the power radiated by the aerial, is then the "effective radiation resistance" of the aerial while  $R_l$ , proportional to the power lost in the aerial elements, is the "effective loss resistance". When considering the relative efficiencies of various materials as aerial elements, Amateurs are vitally interested in the behaviour of the "effective loss resistance" ( $R_l$ ), as defined above, of an aerial system when the materials of which it is made are changed.

Starting from the fact that most aerials are made up of arrangements of lengths of metal of more or less uniform cross-sectional area the "d.c." resistance of such a length, say  $L$ , with area  $A$ , can be calculated by applying the formula:

$R_{dc} = (L \div A) \times \text{resistivity}$ , where resistivity is the resistance per unit length and unit area for the

material involved, usually given in ohms per centimetre cube. Taking  $L$  as a half-wavelength at 145 Mc. and  $A$  as the area of  $\frac{1}{4}$ " diameter rod, typical values of  $R_{dc}$  are as follows:

Metal	Resistivity (ohms per cm. tube)	Resistance
Copper	$1.72 \times 10^{-6}$	0.0023 ohm
Aluminium	$2.83 \times 10^{-6}$	0.0037 ohm
Zinc	$5.90 \times 10^{-6}$	0.0077 ohm
Brass	$7.50 \times 10^{-6}$	0.0098 ohm

All these are negligible with respect to the radiation resistance ( $R_r$ ) of a half-wave dipole which is about 65 ohms for the chosen element diameter, but this is not the whole story. As the frequency of the current flowing in the material is increased from "zero frequency," or d.c., an effect, called the "skin effect," modifies the current distribution in the cross-section of the conductor, tending to concentrate it more and more in its outer skin as the frequency rises—hence its name. This reduces the working area of the conductor and so increases its effective

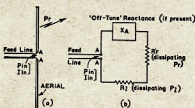


Fig. 1. Dipole aerial and equivalent circuit.

resistance. At v.h.f. the skin carrying most of the current becomes very thin indeed, less than half a "thou" (0.0005 inch), and is proportional to the square root of the conductor resistivity. Thus the skin is thicker for the metals with the higher resistivities, making their "r.f." resistance less relative to their "d.c." resistance than for the better conductors like copper and their use at v.h.f. less futile than might be assumed from their resistivities. The "r.f." resistance ( $R_r$ ) for a current which is constant along the length of the half-wave element is found to be approximately as follows:

Metal	Skin Depth	$R_r$ R.F.	Ratio of $R_r$ to $R_{dc}$
Copper	0.00022"	0.34 ohm	148
Alumin.	0.00028"	0.41 ohm	111
Zinc	0.00040"	0.60 ohm	78
Brass	0.00045"	0.68 ohm	69

These "r.f." resistances cannot yet be used to calculate the efficiency of a dipole aerial because such an aerial does not carry a current which is uniform along its length. The current distribution for a half-wave dipole is normally taken to be half a sine wave, having its maximum at the centre of the aerial, and so equal to  $I_{in}$  in Fig. 1. The average current and also the effective loss must therefore be less than

for the constant current case considered above and integration of the power loss over the whole aerial results in the value  $0.5 I_{in}^2 R_r$  or  $I_{in}^2 \times 0.5 R_r$ . Since the input current to the aerial is  $I_{in}$  it follows that the true effective loss resistance,  $R_l$ , for a half-wave dipole is  $0.5 R_r$ . This value, and the corresponding radiation efficiency and aerial loss in db., is shown for the selected metals in the following table:

Metal	$R_l$	Radiation Efficiency	Loss due to Aerial Elements
Copper	0.17 ohm	99.75%	0.011 db.
Alumin.	0.20 ohm	99.7%	0.013 db.
Zinc	0.30 ohm	99.5%	0.022 db.
Brass	0.34 ohm	99.4%	0.026 db.

It should be noted that these results are for  $\frac{1}{4}$ " diameter elements, not the more usual  $\frac{1}{2}$ " diameter tubes. Such larger tubes would result in still lower "r.f." resistances although the "d.c." resistance of very thin-walled tubes could be greater than those quoted above for  $\frac{1}{4}$ " diameter rods.

Simple formulae for those who wish to calculate skin depth and  $R_r$  for themselves are as follows:

For solid rods,  
 $R_r = R_{dc} \times \frac{\text{diameter in inches}}{4 \times \text{skin depth in inches}}$

For thin-wall tubes,  
 $R_r = R_{dc} \times \frac{\text{wall thickness in inches}}{\text{skin depth in inches}}$

Skin depth, at v.h.f., in inches =  $\frac{2 \sqrt{a} \div \mu F}{\text{inch}}$

where  $a$  is resistivity in ohms per cm. cube.

$\mu$  is permeability, taken as 1 for non-ferrous materials.

and  $F$  is frequency in cycles per second.

Having theoretically established that quite thin elements of a variety of metals could be used for v.h.f. and u.h.f. aerials, the next step was the choice of a suitably cheap, easily available and readily worked material with which to experiment.

Zinc wire is a rare commodity, of course, but a standard line in agricultural ironmongers is galvanised fencing wire in various gauges. This is iron wire with a very heavy zinc coating, entirely adequate to act as a zinc conductor at v.h.f. and u.h.f.; it costs only about 1/6 per pound. The length to the pound for 10 s.w.g. wire, which has a diameter a little over  $\frac{1}{4}$ ", is more than 22 ft., making the cost just over 4d. a foot. The wire can readily be shaped and soldered and is self-supporting for lengths of at least quarter-wave at 145 Mc. It can be fixed to wooden supports by means of staples and this construction is adequate for loft arrays. For Yagis a boom is required and  $\frac{1}{4}$ " or  $\frac{1}{2}$ " galvanised tubing can be used. This can then be drilled transversely at the appropriate element spacings for the

\* Reprinted from R.S.G.B. "Bulletin," June, 1962.

1/4" diameter elements which can be fixed in position by soldering, using a normal, medium-sized, electric iron. Construction results in a light, yet strong, aerial suitable for fixed or mobile application.

This cheap material has been used by the writer for a wide range of aerials with good results. The most spectacular perhaps, was a 10-turn, bi-directional helical aerial. This was supported from a 10 ft. 6 in. long wooden beam. Each turn was 26" diameter, spaced 14" from the next turn, and the aerial was split in the centre for connection to the feed line through a balun. The total conductor length used was about 69 ft.—think of coiling that amount of 1/4" diameter aluminium tubing into a smooth helix! On this aerial, IISVS was heard in the summer of 1959 on sporadic E—a fluke of course, but useful for proving that the aerial did work!

Slot aerials are especially easy to make and mount and another bi-directional array consisting of two such slots, stacked one above the other on a wooden pole some 20 ft. high, was used with good results for an extended period. Folded dipoles are also convenient and a pair in a broadside or "flat top" array was used for a spell in the loft. Yagis of various sizes have also been tried. The outside aerial at the moment is a four-element, wide-spaced unit, supported by a bamboo pole about 7 ft. long which is cleated to a wall so that the Yagi is about 12 ft. above ground. Even in the writer's rather

poor QTH this aerial has performed well and has weathered many high winds in the two years it has been erected. Since January 1961, 40 counties and eight countries have been heard using it, indicating that its performance has not yet been affected by corrosion.

A word of caution is necessary about the substitution of the smaller diameter elements for other sizes in published designs. The length of 1/4" diameter rod required for a half-wave dipole is about 0.956 wavelength (exact half wavelength) instead of about 0.94 wavelength (exact half wavelength) for 1/2" diameter elements, an increase in length of about 1.7 per cent. This correction can be applied to parasitic elements of the same order of length in Yagi arrays but element spacings need not be altered.

The thinner elements exhibit a narrower bandwidth and this may become significant, even for the relatively narrow Amateur bands, in the case of close-spaced Yagis or other aerials which have a very low impedance feed point.

Very little attention has been paid to the 430 Mc. band and higher bands,

mainly because the writer has not yet operated in any band higher than 144 Mc., but, theoretically at least, the fencing wire should be even better at the higher frequencies. This arises because, with increasing frequency, the "r.f." resistance of a given length of material rises only in proportion to the square root of frequency, whereas the length required for a half-wave dipole decreases inversely as the frequency.

The "r.f." resistance of a dipole therefore decreases in inverse proportion to the square root of frequency, and is therefore only about  $1/\sqrt{3}$  or 0.58 of the 145 Mc. figure at 430 Mc.

The radiating efficiencies of such dipoles, constructed of the zinc-coated metal, should be indistinguishable from those of aerials using larger aluminium or copper elements and the diameter of 1/4" should be mechanically adequate for all normal element lengths and perhaps even for mounting booms. It is hoped to try such an array shortly when a new 430 Mc. converter has been constructed.

#### REFERENCES

"Radio Engineering," E. K. Sandeman.  
"Radio Engineers' Handbook," F. E. Terman.

## VK2AHM—R. J. WHYTE



### PERFORMANCE TESTS

(Continued from Page 9)

lows. These non-Amateur stations give little, if any, trouble in this fine mountain spot when a Yagi antenna is used.

The Big Wheel should prove a blessing in many types of 2-metre work, however. If you can take the jibes of pedestrians and passing motorists, a single Big Wheel should give you the best 2-metre mobile signal in your area. If you live in a spot where you can put up only one antenna, and rotators are out, a stacked Big Wheel will make the 2-metre band a lot more interesting for you than it ever was before.

Reports following the appearance of the Big Wheel in "QST" indicate some confusion about the construction of the antenna. Referring to Fig. 3 (previous article), each element (A) runs from the grounded plate (B) to the triangular plate (C).

These two plates are mounted one above the other, at a spacing determined principally by available insulators. Ceramic standoffs 1" to 1 1/2" long are suitable. The Johnson Steatite cone, part 135-501, 1" long, with 8-32 threads, is good. The designers also used a bakelite block 1" long, with molded-in brass inserts, though we do not have a part name or number for this.

The tuning stud (D) is shown bent around a 3/8" radius, but this is not critical. Note that the stub length is 5" for a single bay. For a stacked 2-bay system the stubs should be 6" long. In a 4-bay array the top and bottom stubs are 6" and the inner pair 7". For a single bay mounted above a metal car top for mobile work, a 6" stub may be needed.

—E.P.T.

R. J. (Jeff) Whyte, VK2AHM, is seen in his shack with the equipment used during the 1962 Remembrance Day Contest.

From the left we have, firstly, a Racal RA-17-L receiver, surmounted by a barely discernable Collins TCS transmitter. These were used on 160 metres. Second in line is a Drake 2B receiver; followed by the 32 volt operated receiver, comprising a Gelsoso front-end (much modified) feeding into a BC453—again with changes to suit 32 volts. Just visible above his shoulder is the dial of the main, remotely controlled v.f.o. (Older Hams will remember VK2AHM's "Steco" v.f.o., using EF50 tubes. This tunes the latest model.) Next to his head is the main transmitter, with an 813 switching from 10 to

80 metres. To the right again is the modulator for same. A pair of 811s, zero bias. Below is the 32 volt operated transmitter, a pair of 807s used for both a.m. and d.s.b.

Above VK2AHM's head is the terminal panel for the eight vee beams and the rhombic that are in general use. Above again, an antenna tuning device and a pair of speakers.

Only a portion of the control panel is visible on the bench. Once switches are thrown there, the requisite receiver and/or transmitter comes under the control of a single, foot-operated switch. All the a.c. operated gear is powered by a diesel-driven alternator.

VK2AHM concludes, "The Racal and Collins affairs, I regret to say, are not mine."

● The first part of this interesting practical article appeared in our October 1962 issue, and it will be necessary to refer back to it to follow the discussion here, which concludes the treatment.—Editor.

*J. D. HEYS, G3BDQ*

\* Reprinted from "The Short Wave Magazine,"  
July, 1962.



efficient and reliable equipment which is unfortunately spoiled by an untidy panel layout. The first consideration is the main tuning dial. Space was at a premium when designing this receiver so thoughts of horizontally scaled slide rule dials were dismissed and a Muirhead instrument vernier dial and slow motion assembly was used. This item is available on the surplus market at a small fraction of the cost of more showy yet often less effective dials. With the Muirhead, logging positions to one part in 1,000 can be noted, and the action is silky and positive with no trace of backlash.

The remaining controls are arranged along horizontal lines and help to give (what is hoped is) the professional touch to a piece of home-built equipment. Chrome-plated bolt heads and lettering transfers add finish to the general appearance.

## INITIAL TESTING

Assuming that the front end unit has been built along the lines suggested, and tested, it can be fixed into place on the main chassis. The second mixer and I.F. stages can now be tested, and for this purpose an old BC453 or "Q-Fiver" may be pressed into service. With only V1, V2 and V3 in position the BC453 is loosely coupled to V3 anode and tuned to 460 kc. Signals should be heard, and the top band tuning range is best suited for this operation, there being a number of identifiable stations on at all times. If all is well, V5 can be inserted and the BC453 coupled in turn to its anode. Most i.f. transformers sold these days are pre-tuned to 460 kc. or 465 kc. and very little adjustment of their cores should be needed. If any instability is noticed this must be righted before proceeding further.

V6 is tested similarly, and you must remember to keep backing off the gain of the BC453 as you work along the i.f. strip! It may be that the top-coupled windings of IFT2 and IFT3 cannot be pulled on to frequency with core adjustments. This is because i.f. transformers are designed to work into normal valve inter-electrode capacities, and should this be the case some extra capacity will be required across the i.f. transformer windings in question.

V7a, V7b and V9 should work satisfactorily if they are wired correctly and no special test procedures are needed. The b.f.o. circuit must be tuned so that at mid-setting of C65 (pitch control) it oscillates exactly at the i.f. of 460 kc. Once more the "Q-Fiver" can be used to achieve this.

It should now be possible to use the receiver on an aerial and there only remains the correct setting up of the S meter circuit and the testing of the Q multiplier. The latter must be tuned to the centre of the i.f. passband by adjustment of its coil core and by the pre-set capacitor C47. V4 should just go into oscillation at one end of the track of R33. If it fails to oscillate the values of R30 and R31 may be changed to increase the anode voltage of the 6CW4 valve.

A point not to be overlooked is that the receiver is designed to work with a low impedance aerial input. This may entail the use of an a.t.u. should the station aerial be a long wire or the proverbial "piece of wet string". The receiver will certainly work with a bit of wire tucked into its input socket, but first class results cannot be expected when used in this way.

## CONCLUSION

A muting system has not been incorporated in the design as shown here,

for most Amateurs have their own individual send/receive systems and can adapt the circuit to suit their particular station switching arrangements.

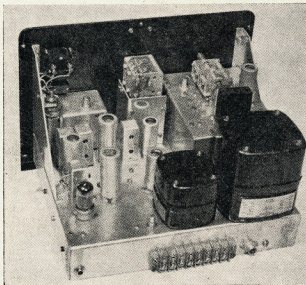
Although many receivers have noise-limiting devices or circuits, the writer has never found it necessary to use them at his QTH except when operating on ten metres or the v.h.f. bands. If the constructor has a particularly noisy location there are many effective and tried circuits which could easily be incorporated in the design.

Whether the whole receiver is constructed or whether instead only certain sections or ideas are borrowed from this article, the writer feels sure that the results obtained will be well worth the effort. Only the usual hand tools were used for the constructional work and a small square-topped wooden stool served as a workbench. This was because of the normal state of the real workbench, it being cluttered with numerous pieces of gear finished, unfinished or abandoned!

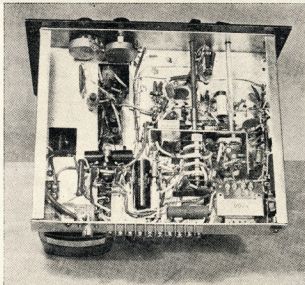
The completed receiver has now taken over the function of main station receiver; the trusty AR88 has been relegated to stand-by and other secondary uses.

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Rear view of the 9-valve double-conversion Amateur-band receiver designed and built by G3BDQ. The C-core transformer and choke are both inexpensive surplus items. All parts used, including the latest valves incorporated in this design, are catalogue items obtainable from Amateur Radio supply houses.



Underside view of the Amateur-band receiver, showing screened compartment for the product detector and b.f.o. circuitry, using a 7380 in this position. Extension rods connect the function switch (SW3 in the main circuit) and the b.f.o. control with their knobs on the front panel. Output transformer T2 is in lower right-hand corner of the chassis, and the pea-bulb serves as an h.t. fuse.



# AN EASY WAY TO SHIFT COMMUNITY CRYSTALS

FOR many years now, large quantities of crystals have been available from disposals sources at relatively cheap prices. Many of these have been pounced upon by v.h.f. enthusiasts, particularly those with frequencies between 6 and 9 Mc., and used in converters and transmitters.

With the large amount of activity by stations using crystal-locked transmitters, particularly on 144 Mc., it is quite noticeable that a large number of Amateurs possess crystals on the so-called "community" frequencies. A good example of this is the 806.25 kc crystals producing output on 144.6525 Mc. in the two metre band.

Several Amateurs have successfully ground, or etched, these crystals to higher frequencies. But the majority of owners either put up with QRM, or put the crystal aside in favour of another which produces output on a clearer frequency.

The obvious answer to this would seem to be to use v.i.o. or v.x.o. control and these methods have much to recommend them.

However, another method of frequency shifting can be used quite successfully. This is the adding of lead, "Brasso", "Silvo", etc., to the surface of the quartz crystal slab. Although this method lowers the frequency of operation, it has several advantages over the grinding or etching methods.

(1) If it does not work, you just scrub the crystal slab in warm water and it will revert to its original frequency, none the worse for wear (unless of course you have been clumsy enough to break it).

(2) If the new frequency becomes inhabited by stronger stations, you can easily shift frequency again to another clear (?) spot.

(3) If, when trying to put the crystal on a specific net frequency, you go too far, all you have to do is wash the crystal and start again.

About the only disadvantage is that over a period of time—something over one to two years—the crystal may drift slightly in frequency, although one of my crystals has apparently remained stable over a period of at least two years.

For relatively large excursions in frequency—up to 300 Kc. on 144 Mc. using an 8 Mc. DC11 holder crystal (slightly less with smaller crystals such as the FT243)—"Brasso" or "Silvo", etc., seems to be best.

After pulling the slab out of the holder, it is advisable to wash it thoroughly with a tooth-brush and warm water. Do not use soap because it is difficult to remove completely when drying the slab, and it may have peculiar effects in the way of frequency drift.

After drying thoroughly with a lint-free cloth, apply a coat of "Brasso", etc., to one side. Allow to dry for several minutes and then polish with a cloth.

Then place the slab back into the holder and check the frequency. If it won't oscillate, take it out again and polish some more, adding more "Brasso" if necessary.

Too thick a coat may also retard oscillation and it may be necessary to wash the slab and start again. This will also be necessary if the crystal oscillates on two frequencies. However, nine times out of ten the crystal will work satisfactorily at the first attempt.

If you want to move it slightly lower in frequency, more polishing of the existing coat will do the trick. This seems to hold true even after a period of several months. But, if the frequency is too low, it will be necessary to wash the crystal slab clean and then apply a lighter coating of "Brasso", etc.

Most of my crystals have operated on numerous frequencies over the last 2½ years, but the current resultant frequencies on two metres are 144.440 Mc. for a crystal normally producing output on the "community" frequency of 144.6525 Mc., and 144.097 Mc. for a crystal normally on 144.1825 Mc.

If it is only required to lower the frequency of operation a few kc. on the output frequency, it seems preferable to use lead from a soft pencil, solder, etc., and apply short strokes to the centre of the crystal slab.

In my case a crystal on 794 kc. was etched to a frequency slightly higher than that required to produce output on the desired net frequency of 144.500 Mc., and then brought down to zero beat by applying short strokes from a soft-4B—lead pencil.

These methods of shifting crystal frequencies may seem strange, but they have been used for many years in various forms, and they do leave large margins for error.

I hope that a number of v.h.f. Amateurs read this article and try the methods outlined. If so, maybe there will be fewer pile-ups on the "community" frequencies.

See you on "two" on "Brasso" control.

—Bill Roper, VK3ARZ



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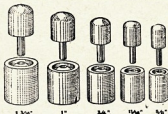
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## Page 17



## SIDEBAND TOPICS

(Continued from Page 17)

The foregoing was reported by Irv. and Dorothy Strauber in the s.s.b. department of "CQ" magazine. They go on to say that with the large number of Amateurs in the United States leaving a.m. and going to sideband, and with so many newcomers starting phone with s.s.b., it is becoming apparent that with the division of the 20 metre band at present, the lower end is becoming increasingly more deserted, while at the higher end, the opposite situation obtains.

Here in this country. I feel that we would do well to follow these suggestions. The presence of s.b. stations from 14.2 Mc down is not going to make much impact on the a.m. stations' capabilities to work DX, principally because the a.m. DX is almost non-existent with present conditions, which you must keep in mind, are still deteriorating. Also the a.m. and s.s.b. compatibility has been proven on the 40 metre band.

A concerted effort by those of us who use 20 metres for DX contacts would quickly establish the old methods used before the coming of sideband. For those of you who have no experience of this, the 20 metre band was segmented as follows:—

14.0-14.1 Mc. C.w.

14.1-14.2 Mc. DX (i.e. non-W) Phone.

14.2-14.3 Mc. W Phone.

14.3-14.4 Mc. C.w.-DX Phone.

The present suggestion is for a return to this plan with W/K phone extending from 14.2 to 14.35 kc. In the past, this plan worked extremely well and would now have an added advantage in bringing a.m. and s.s.b. together. When was the last time you contacted an a.m. station on 20 mx? Your thoughts on this matter would be appreciated.

## HOW MANY?

Do you know that Comps VK5EF keeps a sideband register. This register is a record of those of us in this country who are using the modern method of phone transmission. As at the end of January, 1963, the number of s.s.b. stations by States makes interesting study. We cannot vouch for the accuracy of these figures (they are always increasing), but they are as correct as Comps can ascertain:

VK1 4	VK6 15
VK2 113	VK7 5
VK3 97	VK8 2
VK4 32	VK9 5
VK5 36	

N.S.W. is still holding a healthy lead. Are you sure that your call is in the Sideband Register? If not, send your card with brief details of your equipment on it to Mr. E. C. Daws (VK5EF), East Terrace, Gawler, S.A.

## BOOK REVIEW

The A.R.R.L. has published the third edition of their popular "Single Sideband for the Radio Amateur". I am sure that this edition will be just as sought after and as useful as the last two have been. The manual is still a digest of articles that have appeared

in "QST" and while retaining quite a few earlier items on basic theory, many new articles have been included.

The chapter headings are the same as the previous editions but the material is very much up-to-date. The 7360 tube is given full treatment, modifications to old faithfuls like the Sideband Package and W2EWL phasing generator follow the original articles. Several new linears appear and the v.h.f. gang are not overlooked.

If you regularly receive "QST," you will not find anything new, but it

certainly is convenient to have all this excellent information between two covers.

If you are a newcomer to s.s.b. or thinking about joining the ranks of a large number of satisfied customers, you should not be without this new addition to the Amateur library, the latest and most modern sideband manual yet published.

My copy came direct from A.R.R.L., West Hartford, Conn., where the price is \$2.00 (U.S.). It should be available in Australia by this time at about 30/- per copy.

## TWO NEW AWARDS

The Koonstad DX Club has among its members the foremost DXers in that area including ZS4MG, ZS4IO, ZS4U, ZS4LK and ZC4CO. In order to recognise outstanding achievements and all round operating ability in the DX fields in both phone and c.w., the Club has instituted two awards.

### 6 X 6 AWARD

To qualify for this award applicants must have proof of QSO with six different countries on each of the six continents. Of these six countries, three must have been worked on phone and three on c.w. (18 different countries on c.w. and 18 different countries on phone.) Stickers are available for 12 x 12 and 18 x 18 under the same conditions as above, i.e. half to be worked on c.w. and half on phone. The 6 x 6, 12 x 12, and 18 x 18 are recognised by the Certificate Hunters' Club as three separate awards.

### 6 IN 6 AWARD

This award is for working the six continents within a period of six hours and is available

on a c.w. only or phone only basis. Each award is given for one band only—no mixed band working is allowed. Therefore the following different awards can be claimed: 28 Mc. phone, 21 Mc. phone, 14 Mc. phone, 7 Mc. phone; 28 Mc. c.w., 21 Mc. c.w., 14 Mc. c.w., 7 Mc. c.w.

No contacts made during any contest will be allowed and the application must be endorsed to that effect by the applicant.

For both the 6 x 6 and 6 in 6 awards, it is not necessary to send any QSLs if the application is countersigned by two other Amateurs, or Radio Club official, that the QSLs have been seen by them. However, the Koonstad DX Club reserves the right to request any QSLs.

Both these awards are also available to Short Wave Listeners under the same conditions.

The cost of each award is five I.R.C. by surface mail or 10 I.R.C. (1 dollar in case of U.S.A.) for air mail.

For both awards apply to the Secretary, Koonstad DX Club, P.O. Box 378, Koonstad, South Africa.

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Very few v.h.f. Amateurs, whose transmitters are crystal locked, have facilities available to conveniently allow them to check their frequency relation to other signals in the band. All v.f.o. controlled transmitters have (or should have) this facility which is known as the "beat" or "spot" position.

All that is required is that the oscillator be made operative, either by a third position of the T/R switch or by a separate control, so that a signal can be heard in the rx and the operator is able to "spot" his frequency against adjacent stations. This should be done every time you answer a CQ or give one.

If there is a station already operating on the frequency, the correct thing to do is to stay off the air or switch to another crystal, once again checking its position in the band. If another station is using the frequency you normally use, leave him be. He was there first. Do not try and blast your way through over the top of him. This is a shocking practice and happens far too frequently.

There are large expanses of vacant frequencies in all our v.h.f. bands so there should be no reason for heterodynes caused by adjacent channel interference.

Unfortunately the only notes that had arrived prior to writing this were those from Roy BAU, a VK 5ZCF. Would you scribes please note that their notes should be posted to me no later than the first day of the month preceding publication. 73, 3ARZ.

#### VICTORIA

50 Mc.—This band is reasonably good during Jan. On Jan. 14 it opened to VK2, 4 and 5 ZL mobile. Jan. 19 open to northern VK2 and southern VK4. On Jan. 20 there were patchy conditions all day with the band in and out to northern VK2 and southern VK4. At approx. 1500 hrs. E.A.S.T., 42J5 at Longreach was worked and at 2009 hrs. a VK3 at Kalgoorlie. Again on Jan. 22, at approx. 14.45 hrs. E.A.S.T. it was open to northern VK2 and southern VK4, as it was on 26th and 27th also.

New stations on 50 Mc. include Graham 22AA at Essendon, David 3ZOP at Moorabbin, Gordon 3ANM at Rockbank, and Dennis 3ZLY at Flemington. Ken 4ZGX, who has been portable at Hampton, but should have VK3 3ATW home, will be located at Beaumaris. Call by now, will be located at Pascoe Vale. March scramble will be on 6 mhz soon from Hampton. Vic 3ZKN at Pascoe Vale has appeared on the band and is using 29w, to an 815, a two element beam and a four tube converter. Bert 3ZGD has made a return to this band with mobile equipment which includes a v.f.o. controlled tx.

The Jan. 6 mhz scramble was held on Sunday, 27th Jan., at 7.45 p.m. Fifteen stations participated and the winner was Ken 3ZNY. 29w March scramble will take place on Sunday, 24th at 7.45 p.m.

144 Mc.—Several new calls were heard on 2 mhz during Jan. but the only one we have heard on 21 stations parties was from VK3 at Ormond. He is using a R. & H. converter, a turnstile antenna, and is running 80w. to a 52 ZL tx. Ken 3ZMF, who is using a 52 ZL tx, Bill Warrnambool, Gordon 3AGV at Colac have been active on the band and Melbourne stations should keep an eye open for them as well as the 52 ZL tx. Bill Warrnambool has been active on the band and Melbourne stations should keep an eye open for them as well as the 52 ZL tx. Bill Warrnambool has been active on the band and Melbourne stations should keep an eye open for them as well as the 52 ZL tx.

The Feb. 2 mhz scramble was held on Sunday, 19th, at 7.45 p.m. Ron 3ZIW was control station and 21 stations parties. One of them country stations. Winner was Bill 3ARZ with 16 contacts and 3ZOH and 3ZNV were equal second. Ron 3OM at back on 2 mhz contest will be held on Sunday 10th at 7.45 p.m. The Jan. 2 mhz fox hunt was run on Wed. 30th with Tom 3AOG piloting the fox car. Winner was Bill 3ARZ. The Feb. 2 mhz fox hunt will take place on Wed. 13th commencing at 8 p.m. from College Cres., at the rear of the Melbourne Club.

The Jan. V.h.f. Group meeting, held at the W.I.A. rooms on Wed. 16th, saw 45 members in attendance. A large amount of business was discussed and then Bill 3ABF gave a

very informative lecture on how antennae, particularly yagis, worked. Supper was then served and the meeting closed sometime after 11 p.m. The March meeting will be held on Wed. 20th at 8 p.m.

I wonder how many VK3 Amateurs realise that there is an attractive certificate available to those who can produce 100 QSL cards confirming QSOs with 100 different stations on frequencies above 100 Mc. Claimants should apply to the V.h.f. Group, 73, 3ARZ.

#### SOUTH AUSTRALIA

50 Mc.—As these notes are read the VK5 beacon station should be operational, its frequency is 50.5 Mc. (for further data see "A.R." for Jan.). The beacon has been undergoing extensive tests at the QTH of "Le Patron" 5LA, and as we write it is only a case of obtaining the correct circuit and installing the rig at Mt. Lotfy.

The thanks of the Group are extended to Bob 5ZDX (keying mechanism), Rick 5ZPQ (antenna), Bob 5ZGQ (r.f. deck), Al 5LA (power supply and keying electronics), and Brian 5TN. The Group's thanks should also be extended to several large organisations who contributed parts (although unwittingly). Premium quality components are used throughout and the tx keying is entirely electronic (although programmed mechanically).

New chaps on 50 Mc. include: Bert 5ZDU at Rose Park, running 60w. to a 6/40. DX for Jan. was very good during the first portion of the month, but fell off thereafter.

144 Mc.—Biggest news on this band is 2ZGC at Broken Hill (270 miles). This chap is on 144.25 Mc. and although no equipment details are on hand, he must be quite well set up as he so far worked some Adelaide stations (5AW, 5KO and 5ZDR). Now daily skeds are held between Adelaide and Broken Hill, between 7 and 8 a.m. C.S.T. and the skeds have been successful at high percentage of the time. Other chaps are welcome to listen and call during these sked times as it is understood that the contest in Adelaide and Adelaide only ones 2ZGC has had. Of course the Broken Hill station will have his antenna on Adelaide for these skeds, and the Mt. Gambier gang may find it well worth while keeping an eye out.

A brief ionospheric opening occurred on 144 Mc. during 12th Jan. 1963. 42AX and 42AZ heard VK5s and vice versa, but no QSOs resulted.

Snowy SNW at Crystal Brook has put up a 10 element yagi on 2 mhz (144.17 Mc.) and is working even better than his 10 element (180 miles). Also at Crystal Brook, and believed to be much better located than SNW, is 5BG. This operator has not been active yet, but his 2 mhz gear is good and it will be interesting to compare his signals with SNW's. 5BG's freq. is not known yet.

David 5AW has a 46 element array going on 2 mhz (4 x 10 element Yagis) and a new 6CW4 converter. David is now well and truly organised after a period of inactivity following his move from Penola. The 52 ZL tx is a suit-est. 5BG has been heard on 144 Mc. Brian 5ZBR now has 2 x 10 element Yagis on 144.

General News—Les 5ZLS, accompanied by Colin and Trevor, are Mt. Gambier chaps who have been staying in Adelaide for a couple of weeks in Jan. They have gear on 6, 2 and 1 mhz and are having numerous contacts, both on 2 mhz and 1 mhz. Les 5ZLS is now 5ZL and is at a high level according to these chaps and contacts on 144 Mc. as far as Melbourne have been reported.

Bob 5ZDX is getting mobile gear going on 6 mhz. What happened to the a.s.b., Bob? Hughie 5BC has been very active recently and has been working Adelaide stations on 2 mhz, including chaps in the Hills. Eastern suburbs (5BQ and 5ZCR). Brian 5ZBL, of Maitland, is moving soon to Clare. Curi 5ZBL is now 5ZL and is now 5ZL.

Bob 5ZCP at Whyalla has built himself a 50 ft tower and hopes to work into Adelaide on 6 and 2 mhz. Doug 5KKK is now well and truly resident in Darwin; he has been worked a few times by the Mt. Gambier gang. He is operational on all bands 80 to 6 mhz. (Call 5KKK now, of course.) Doug's antennae were limited at the time of

writing, but he hopes for improvement here. Mick 5ZDR looks like taking out the Ross Hill and VK3. Your Port Moresby has been transistorsed v.f.o. for 50 Mc. (2 x OC11). Now let the mains voltage do what it likes 73, 5ZCR.

#### PAPUA

50 Mc.—With the exception of 1st Jan., on which VKs 1, 3, 4, 5, and 7 were worked, no signals were received on Port Moresby during the month. This was partly due to the fact that I was absent from the home QTH for 10 days early in the month. 5ZBVY (Rabaul) who has since returned to Moresby, reported openings to VK on two occasions, although no stations were worked, and TE scatter 49 Mc. during on one afternoon several hours at 50 plus. Paul advised that he has interested two stations at Rabaul in 8 mhz operation and that their signals may be heard in the near future. No further information on this at present. Also it is hoped that another VK9 Papua station, approx. 100 miles from Moresby, may be operative within six months when equipment becomes available. No further news from Jim 9AS at Wewak, T.N.G., who should have been back from his leave before these notes appear in print.

144 Mc.—No activity during the month. 9AU listened during Dec. when the VK4/VK5 openings occurred and also carried out a test with 42AX without result.

TV.—Channel 2 viewed on 16 days, signals heard from 9AU, 9BZ, also ABT2 and ABT3 on 1st Jan. 73, 9AU.



## Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

#### ROSS HULL CONTEST

Editor "A.R." Dear Sir,

From an S.W.I.'s or my own observations on the Ross Hull Contest of 1962/3 I find that there is not enough support considering the number of Z calls registered. One finds a very few keen contestants while the majority say "I'm in it, but will give you number," then amble on re their rig and general dogies instead of letting the other chap get more contacts and points. A good lesson in contest procedure can be learnt from VK4 contestants.

Recently I heard a VK2 full call operator suggesting to a Z call against v.f.o.ing on to the ZL frequency because the strong VK signal may cover the Z call, carriers, and stop a contact. On a number of occasions I have heard the same full call chap in contact with ZL on 51 Mc. going into lengthy detail on his trips to that country while many of the limited call chaps lose a chance of the only DX to be had by them. If he wants to rag chew, why not go to the frequencies of which the Z calls cannot use, or get his contact and give the other lad a fair go.

With reference to the scoring system in the Ross Hull Contest, I consider that the old system or one similar to the R.D. would be preferable to the present one. The simple point is an advantage to the chaps in and around the metropolitan areas and quite a handy number of points can be gained. The mileage problem, and naturally big scores, must give the Contest Committee a lot of work, which in the end could be made easier by a more simpler system.

—Chas. Abernathy, WIA-1.2311.

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Hi there fellow dial-twisters! This month I would like to say a word or two to the newcomer to a.s.w.l. ranks.

When you first begin to send out reports to a station, do not be too hasty to get that report off without first considering whether your report contains enough detail. Make sure your report contains the following: Time (GMT must be used when reporting to an overseas station), date, signal report. The report should contain information of the QSO that you heard. Also if possible, the signal report that the transmitting station gives to the station he is working, and any other details of the transmission that you consider would be of interest.

Be courteous and friendly in your report. Give details of your equipment and of your location. A self addressed envelope is always appreciated. If you are sending to an overseas station, it is suggested that where possible to include an international reply coupon.

There are times when a station may be having trouble with his tx, if so report what you hear. If a station is only S3 to 4, well give him that report, and not an S8 to 9. Naturally he will appreciate an accurate report. We take the view of a very poor view of false reports being sent to stations.

What has become of many of you fellows that used to send us news of your activities? No doubt some of you now have call signs, but there are many that have not. But even if you are on the air, don't let this prevent you from writing to us now and again.

It has just occurred to me that if there are enough of you who listen on the v.h.f. bands, how would you like us to start a v.h.f. ladder as well as our usual DX ladder? Anyway, fellows, let's have your ideas on the subject.

### VICTORIA

Maurie, our President, Ron Young and Ian Thomas have been flat out in the Ross Hull Contest. Ron recently put up a cubical quad for 30 MHz and a very loaded dipole 30 ft high and has really been pulling in the DX on it.

The DX ladder has really been given a shake up by the DX of Maurice. He has been getting something like four new countries verified each month. An interesting one heard the other day at 10.00 was a station from the DX who was mobile in ZSL land. But generally conditions have been very poor on the DX bands. Several interesting Russian stations have been heard on the short path of an evening. Those of you who do not listen to s.s.b., and only to a.m., are certainly missing out on much DX, plus the fact that the DX position is far less than with a.m.

At our monthly meeting it was decided to start an organised monitoring of the bands. The first run will be on the 7 Mc. The idea being to listen on the band every Sunday for a month between 7 and 7.30 p.m. Then we will compare notes at the next meeting. It certainly is a good idea of yours Tom, and we hope to have further activities along these lines providing we have good support from our members. So go to it chaps and see what you can hear. We were pleased to welcome two new members at the meeting. They were Michael and Robert. Pleased to see you with us boys and hope to see you at our future meetings.

Craig Cook has taken over the position as publicity officer so we would you kindly send any news you have for the weekly broadcast directly to him. Any news at all will be very much appreciated. I can assure you, so go to it and let Craig know what you have been hearing.

It has been decided to hold our Convention now in April. Due to a number of reasons the main one being that as the State Convention is being held in March, we felt that it would be better to have ours a bit later. I feel that if I have not received any information on your scores after a period of three months, I think it is only fair your name be withdrawn from the ladder until I hear from you again.

### INTERSTATE ROUNDUP

Chas Abernethy has recorded a good score in the Ross Hull Contest, however he tells me he has been encouraging a friend of his who is a newcomer to the a.s.w.l. ranks, and he (the newcomer) amassed a much higher score in

the Contest. Nice going there young fellow and with a score like that you fully deserve to win the Ross Hull. It is very good of you Chas to give your time to encourage the newcomers to the a.s.w.l. ranks. Chas has the distinction of possibly being the first a.s.w.l. in VK to have confirmed all ZL districts on 50 Mc. Nice work, Chas, and congratulations. Recently Chas received his certificate for the 1961 R.D. Contest.

Eric L3043 has recently returned from a holiday in VK6 and reports that he and his XYL had a very good time. Recently Eric received the B.E.R.U. award for being the outstanding a.s.w.l. for 1962. Congratulations on such a wonderful effort. Eric received 562 QSLs last year from 108 countries. Many thanks for your very interesting letter, Eric.

Noel Harrison, L3101, despite his recent illness, comes up with a nice DX haul. Noel assisted 3WC to erect his Thunderbird TH4 recently. At present Noel is flat out learning c.w. So watch Eric for some competition from Noel in the future. Noel's tx is working very well on s.s.b. and some good DX has been heard. Noel reports that EA4GZ was his only QSL for the month. While you scribe only received ZL1ABZ from the Kermadec Islands. Noel is one of the few people that has managed to obtain a QSL from WIBC. This card is some 35 years old and is rather an antique.

Y.R.C. fortunes in VK3 go on to greater and greater strength, especially now that the High Schools have resumed activities. Note the facts—more than 40 clubs, 60 elementary certificates, 6 junior certificates, 2 A.O.C.F. (and four more probable), but this in VK2! I am making enquiries in other Divisions to check my information—you may have to pardon my visit.

Hints to Club Leaders: Fathers don't take kindly to laying out £10 or so for a boy to start a hobby—boys commonly give away other hobbies in a few weeks. Try to get all the old but serviceable parts you can store. Radio service shops will help by giving you old sets normally thrown on a rubbish-heap, provided you guarantee not to do them out of any business. You can assume any place handling electronic equipment has something to throw away. Finally, issue it free to genuine experimenters but write it in a book and call it back if it is not properly used.

News jottings: The first VK6 registration of a Y.R.C. is the first Kalamunda Boy Scout Group—probably a transmitting type club with assistance from local Amateurs. Let us know about it—and stir up some others.

Our good friend Peter Drew, L6021, has been busy battling with the DX on most of the bands over the past month. Peter listens at night on both 7 and 3.5 Mc., however he is finding the QRM rather a problem and as a result he has been QSYing to 3.5 and listening to the Ws. How do you manage to put up with the static at this time of the year, Peter? He has been kept busy with letters from a number of American a.s.w.l.s. and Hans. Very pleased to hear from you Peter and keep up the good work. Now come on you other Sandgrappers, how about giving Peter some support?

So until next month, 73, Mac Hilliard.

### DX LADDER

Countries	Conf.	Hrd.	Zns.	Conf.	S.s.b.	Hrd.	Wt.
E. Trebilcock	277	283	40	—	—	—	50
D. Grantley	112	252	38	16	97	34	—
A. Wescott	84	159	31	9	197	11	—
M. Hillard	11	115	23	13	129	11	9
M. Cox	63	220	29	30	136	16	—
C. Abernethy	44	85	27	—	—	—	14
P. Drew	42	103	27	15	111	9	—
N. Harrison	40	102	27	2	14	29	—
I. Thomas	29	134	16	8	88	11	—
P. Fields	26	133	—	—	—	—	—
D. Jenkins	10	144	7	—	—	—	—
H. Burger	6	185	3	1	19	—	—

## YOUTH RADIO CLUBS

Auburn (N.S.W.) Senior Scout Group hopes to start a Y.R.C. to supplement Scout training, with assistance from JVA VK8AMQ.

We're proud of the scholastic success of our members—Commonwealth Scholarships for George Barnes, of Carlingbah, and Vince O'Donnell, of Wairoonga (N.S.W.), son of Tom VK8OD. There must be more, so let us know about them.

VK8EQ says Port Pirie Amateurs are forming a radio club and propose starting a Y.R.C. in the high school. Is there any help at Divisional level?

Barrie VK4LN is starting a Y.R.C. in a Gympie (QLD) Boy Scout group.

Frank VK1ZJ, who established the Y.R.C. at Bass Hill (N.S.W.) High School, is now in Armidale and proposes to repeat the pleasant experience in a Boy Scout Group.

Don Reed (ex VK2DR), now Government Radio Officer on Christmas Island, Indian Ocean, proposes to start a Y.R.C. for Chinese and Malaysian lads and correspondence with V.I.C. members in VK would be a great help. Don's new call sign is VK9DR.

73, de Ken VK1KRM.

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## Page 23

Bill and his YL. Bill has been heard operating from his new QTH at Orange at good strength. Don ZAKT is preparing for his yearly hibernation to the house for the winter and should be back on 2 mx very soon. Jack ZNC is on every night on 2 mx after fixing up his aerial change-over relay and listening to his converter through a newly acquired rx with all the mod. cons, etc.

Last night, I held at yours truly's and six members heard two tapes plus slides, namely Quad and V.h.f. Antennae, and it was midnight before the last QSO ended. Keith ZABK answered one of Noel's (ZZNS) many CQs in the early stages of his operating and was at the time his furthest report from the west. Also Noel and Noel ZQA have been working 2 mx duplex with no problems. Jack ZADF has been getting mixed up with Noel on 2 mx duplex also.

Wal ZMS and Ken ZAVN are still busy with the bush fire show, but it looks like the real danger period is over. Yours truly has made a mod. to the 7 Mc. mobile so that we now have r.f. with audio instead of audio and some r.f. AI Z2FB is back on 2 mx with new gear and is coming through loud and clear. A new heap which I have not reported was obtained by Bob ZASZ and is of the self tapper variety, so we should hear a lot more of Bob mobiling the countryside.

The Feb. lecture was by yours truly and dealt with electronic business equipment including slides. 73, ZADA.

## VICTORIA MEMBERS

Activity in the Zone has not been very great, but should improve with the passing of harvest, holidays, and hot weather. Bill ZAKW has an alternator in action and his gear is now running from a.c. supply. Wilson ZAFU has his mobile rig going nicely and his signals have been heard from various parts of the State. Vic ZAEQ has some equipment ready to make himself heard on the 53 Mc. band. Bert ZEF has been in strife with both Hx and Hx and has both tamed and is operating on 80 and 20 mx. His first call on 20 mx resulted in a QSO with EPAC. Nice work! Keith ZAKP has been busy with r.f. but one of these days will blow the cobwebs out of his gear and come on the hook-up. Allan ZHL has been working fairly regularly on 20 mx s.s.b. and "bags" a few rare ones. Al Scarlett, WZCC will be in VK in April and will be staying with Allan at Callawadda for a week. Keith and VKZRL have been in contact since 1934 and still maintain weekly seds on 40 mx c.w. Al hopes to meet as many of the gang as possible during his stay in this country. Bill ZAKW has been enjoying a visit from his brother, Tom ZFK. Tom is an "old timer" and operated as 3TK around 1930. 73, ZHL.

## NORTH EASTERN ZONE

During January ZACK tried his hand at making baluns for 2 mx. It may be recalled that a few months ago John assembled an electronic organ kit; nowadays he spends a little time learning how to use the unit.

After months of waiting, JAF finally obtained a vidicon tube and was thus able to finish off a closed circuit t.v. project. The circuit works as per specifications and has now been "junked". Underland ZAWT still plodding along on 2 mx exciter. Yarrowgona Club not heard too well here, nor very often for that matter. SCI has erected an antenna on his ex-t.v. 60 ft. tower. Late in Dec. JAYD had to pull down the triband quad to carry out repairs. Lesson learned here is not to use single strand wire as strainers or elements. JAAQ currently portable near Balarat, occasionally nets into the Zone hook-up on Friday nights on 80 ft.

ZACD has constructed a "Monimatch" and early in Feb. was learning how to adjust it. ZASF and cohort, ZZHO, are contemplating trying out modulated light transmissions, however gear has still to be assembled and this is the killer. ZJZH ceased Morse practice prior to Xmas and finds it difficult to start again. ZASY flung out one of the two 807s of final and intends to be satisfied with single

807. Took a portable 6w. to Scout Corroboree at Hobart in Dec., however the location was unsuitable for propagation; only made four contacts.

Shepparton chaps have been busy on plans for the State Convention, to be held there on March 16 and 17. Please advise us if chaps please give us a fair go and get your applications in early to the appropriate quarter, 73, ZASY.

## MIDLAND ZONE

The festive season is over and by all appearances so is all activity within the Zone almost. This month I have not heard much from the Zone and I expect there is little to report as to members' activities.

Ian ZAJU is active on 20 mx, working some DX, but his signal is fading and very patchy. There has been some short skip operating and short-long skip periods intermittently to Europe on the short path in the evenings. 10 and 15 mx are a dead loss at the moment. 40 mx is patchy and noisy and the stations working this band stay in their groups and I find it impossible to attract their attention with my T.W. input.

By the time these notes are in print we will have had our quarterly meeting, which will have been held at 7.30 on the 15th of the evening will be 3ZLL, Ian Gorsuch. That's about all I have this month, so fellows please help keep these notes alive with news of your doings. 73, ZND.

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## QUEENSLAND

Who was the character that said, "If you put your neck out long enough, and often enough, it will get lopped off"? Well, it's happened to me. I have seen electricity on one or something, into being the Sub-Editor for the Sunshine State. Well, it was sunshine when I left for Brisbane. I'm not sure whether I had an honour or not, but I expect I did quite a lot of fun out of writing these notes and keeping you posted on the doings of the V.I.A. I'm anxious to hear what you have to say, news, I'll invent some, so keep me posted, as I have a very vivid imagination, and I would hate to deny to get the wrong idea about us stringing along. Our Queenslanders, of course, pre-supposes that someone pinches the Editor's red pencil. (Like h—, Ed.) Now just a second, I'll put out on my eyeshade and make like a Sub-Ed.

The Jan. general meeting was held at the State Services Conference Rooms on Friday 18th and was particularly well attended by our members, 52 signed the attendance book. The other eight were probably spies from Southern and South Western States, checking on how a well conducted meeting can be had. Pat 4KB was in the chair and business centre. The agenda for the evening was on the Divisional Constitution. If any member is not clear on the article, please write to Box 638, Brisbane, and he will be put right. The important business of the evening was Don 4GP's talk on "Television," and how Don warned to his subject. He really put all his interest into it and drew his audience with him for two hours.

Have you any notices of motion for the Annual General Meeting in April? If so, get them down to Box 684 as soon as possible.

The Ipswich and District Radio Club had a good attendance of 35 members at its Jan. meeting, which was held at the 2nd Ipswich School Hall. A.O.C. club was started with a qualified teacher in charge, and Ron 4RG is looking after the Morse angle. Merv ZJGM has been elected as assistant sub-editor to help me with these notes and I am very pleased indeed to have him, because Merv, you know, I'm going to lay the blame at your feet for any notices that ye Ed. may disagree with.

My young son asked me to check his homework the other night and he was working hard. He had to break down was Auditorium. He reckoned that it came from two roots, Audio and Teatime, the bull, "No, son," I said, "that sort of definition was not good time ago, although I do believe it is still used in South Australia."

Al ZLT has returned from three weeks at the seaside and then worked some rare Middle East DX that had accumulated on his aerial absence. He had only complaints re his holidays, was that shoes weren't made for human beings. Man, a good fisherman isn't human, he only looks that way. What did you want shoes for? The feet are just there, shot for luring unsuspecting sandworms to the surface, unless of course, you are ticklish. Some people, when he lured a 4ZED, who is the "Printer's Devil" for "QTC," hung up his stocking for Santa Claus and you won't believe it, but he got a new rx. I'm led to believe that Bill never did like the blonde

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member of the Andrew Sisters, and he is pleased to tell all and sundry that he can tune in.

Bob Campbell and Ray Rumble, previously of the Southport Radio Club, have offered to organise the 10th Convention to be held at Alexandra Headlands on the 29th, 30th and 31st March. It is right on the beach, no cooking, washing up, and plenty of room. Bring the whole family and have a good time. It's a wonderful opportunity to meet your Hams and also get your XYL interested. The cost is \$10.00, but for each of these bands, under the bonnet is the power supplies. And with all this gear he can still fit three people in the cab. Then to cup it all, he showed me the latest thing in crash helmets. Built-in transceiver and aerial, the whole works. Too complicated, I'll stick to my metal wireless. I could really go to town on this gear, but I'm afraid Y Ed will limit my verbosity, the only excuse I have to offer is that over 25 years ago I was scribble for VK4, so 'give us a go will yer'!

Another cheery bloke I met was Les 4EH who is not a well man by any means. Thoroughly enjoyed my visit with you Les. His XYL makes a good cuppa, too.

Remember "Doc" Hadley, you old timers? Well "Doc" has staged a comeback. His old call sign was 4AH and its present holder has a mighty predecessor to live up to. "Doc's" present call sign is 4HY. 73, Uncle Xray.

**TOWNSVILLE AND DISTRICT**  
Basil 4ZV called in on his return from his overseas trip south and as usual visited quite a number of places on the Murray River district and oozes from the fruit he consumed direct from the trees. Ted 4EJ at long last has built a new shack and the boys in VK3 are dying to see proof as per a coloured photo and not re-touched; boasts that all the old junk has been given the go-by and at present is making in-built cupboards to keep the place clean and tidy! Bert 4LB is highly satisfied with his new quad and guarantees to out-guess my beam! Alan 4BS made me welcome and call the other night on the band and quite a long-time no hear him. Bob 4MF is still chasing better gear to get gear and at present using American rx; hopes to go on a long tour mobile in the near future.

Noel Lynch, with other Scouts, took some of the V.h.f. Group to Nerang on 2nd Feb. to look over the Easter Venture route, for which the V.h.f. Group, with a 40 m link, will be doing the communications.

Bob 4ZY is on the walkabout again. This time he is heading for Tasmania. Won't be back until Easter. How do these blokes get all these holidays? Basil 4ZV is home again after nine weeks' sea. What I mean? Heard about Stan 4SA and his fishing trips. He went out fishing and caught only catfish. Most fishermen take a knobknocker along to deal with these menaces, but Stan belts them to death with his wooden leg. How do you put up with him, Jess? I believe Alf 4OI and Stan 4SA declared a truce whilst I was in Brisbane. It seems as if they cannot agree as to who can talk intelligently for the greatest length of time. Or for that matter, just talk.

Jim 4HZ is still in trouble with the modern boys (t.v.), but he has hopes of getting it licked in the near future. Jim's XYL, Nell, has been in hospital seriously ill and is now back home. We all hope you feel much better Nell and recover from your usual cheery outlook.

Mal 4DO is going overseas on holidays. (Again, see.) How do you do it? He is leaving on 5th April and judging by his itinerary whilst enroute on him, it's going to be some holiday.

Some of the members of the Burdekin Radio Club have taken up flying and are doing quite well at it. Associate member, Bill Ciesloski is flying solo and is only waiting for his 40 hours to come up. Dale 4ZDG is another who is doing quite well. Ross 4RO is chasing t.v.i. or was, but as he is going on holidays (that word again) during Easter, he is building v.h.f. gear to take with him. Ever seen a 400 kHz or 400 kHz? Bill 4WJ is up in the morning? You can pick up some good gear on the behaviour of 6 m from listening to them.

Toy Cook for a gentle trot one night in Brisbane, and ended up at Salisbury; going along Dulcie St. XYL suddenly shied and realised that the object he had shied at was Tel-Star. Dismounted for a closer look, and discovered it was Tel-Star. It was Ron's (4ZK) Morris utility, bristling with aerials. Fair dinkum, I've never seen so much gear packed in such a small space. On the front bumper is a 12 ft. whip for 40 m and on top of the cab is another for 6 and 2 m. In the cab is a Compass rx, converters for 40, 6 and 2 m, for each of these bands, and under the bonnet is the power supplies. And with all this gear he can still fit three people in the cab. Then to cup it all, he showed me the latest thing in crash helmets. Built-in transceiver and aerial, the whole works. Too complicated, I'll stick to my metal wireless. I could really go to town on this gear, but I'm afraid Y Ed will limit my verbosity, the only excuse I have to offer is that over 25 years ago I was scribble for VK4, so 'give us a go will yer'!

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John 4DD is still on the band and heard in QSO with the States. Claude 4UX and family have returned from a holiday trip to the big smoke. Ere these notes appear I will be calling on the 40 m band. I have a complaint why I never received a further zero to my salary, same as that favoured earlier? No names, please. This time I will have left on 4th April for a trip south to Hobart and hope the weather treats me kindly as at present the floods are everywhere.

Pleased to know that Eddie 4OW has returned from Darwin to Brisbane and can be relied upon to come on the air each Sunday when shift work allows.

Why oh why cannot those chaps who come on the air "testing, testing," please give their call signs (besides breaking the regulations). They will get a report on their testing if only they would check their freq. as I often call QRZ the testing station and will be pleased to give them a very candid report. So what about it chaps, if you want to test, there are many others rounding the band like myself who would be only too pleased to assist. That is the basis of the Amateur Spirit.

Will prevail on Claude to write the notes while I am away on leave, so cheerio, 4RW.

## SOUTH AUSTRALIA

The monthly general meeting for Jan. of the VK3 Division was held in the new clubrooms to a very representative gathering of members and visitors, and the guest speaker was Mr. C. Pearson (5FE), who discussed "Transistors and their applications." Very little could be said of the technical side of this lecture because practically the whole subject lent itself to the blackboard, and as the VK3 Council is still persisting in its attitude of refusing me permission to post the blackboard away to the magazine, it goes without saying that my comment must be limited to the personal reactions of the members present. Clive mixed his theory with a little humour, a good deal of dexterity on the blackboard and a deal of common sense. Advice. All in all Clive should be more than satisfied with the reaction to his lecture and his audience definitely richer in transistor theory and application. Members took their opportunity at question time to quiz the lecturer and Clive came through with flying colours, further demonstrating his knowledge and competence in the subject. Tony 5H was responsible for the vote of thanks to the lecturer, and the applause which greeted the vote of thanks was sufficient indication of the splendid job performed by Clive. Incidentally, Tony made a suggestion that perhaps Clive would consent in the near future to give a lecture on the basic theory of transistors, and whilst Clive did not comment, the members' reaction to this suggestion would do the trick.

Very little business of note came up for discussion, although the suggestion that VK3 should run a contest to help publicise the coming Adelaide Festival of Arts (approx. one year hence) caused quite a deal of discussion and the matter was put forward for a month later to check on the general membership reaction to the idea. The meeting closed at 11 p.m. (compulsory now in the new clubrooms) and members departed for their couches of virtue, or otherwise, well pleased with the night's entertainment, and more than pleased with the appointments and general facilities of the new clubrooms. Come along some time and see for yourself.

Among the visitors to the monthly meeting was two VK3s, Keith 3IV from Ballarat and

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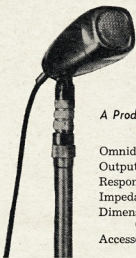
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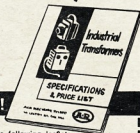
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Col 3XV from Oakleigh. I had quite a chat with these two gentlemen and despite the fact of being VKs, they turned out to be extra good. Col 3XV is a Mr. Robert Anderson (ex 5MA) of Cheltenham, but probably better known from his association with Alf Trager and the Flying Doctor Service. Maurice is a Col 3XV but I saw an ambassador for VKs, a good representative to boot.

Rob 5BG came back in the R.R.'s department after a sojourn at W.R.E. Rob has certainly been in his time and without any doubt has acquired a good knowledge of things in all matters radio. Always willing and eager to know in any way, he would make a good council member and someone should begin to talk to him in that direction.

Athol 5LQ noticed at the meeting with quite a discolouration below his right eye, which led me to ask him if the verandah post had possibly fallen down. He did not seem to be very anxious to answer my kind enquiry, but finally broke down and admitted that the discolouration was due to a r.f. burn! Could he possibly have been having a lend of me?

Noticed our estimable chairman, John 5JC, anxiously glancing across the room several times during the lecture. He was looking at me from his aristocratic looking brow. With his added db. level to his hearing, he apparently could catch the mumble-mumble from across the room. I am sure he knew more about transistors than did the lecturer. I was not interested enough to ask him up. He was right on the job. Next time I answer you back I'll have to whisper.

Talking of mumbled during the lecture, I noticed two of those pressure handsets, the old yip to each other using the deaf and dumb sign language. It's a long time since I used that method myself, and am somewhat rusty now. But I understand it. Then I realised that I have missed something in my sojourn on this earth!

John 5JC was been scouting hither and thither around the VKs countryside over the Xmas break and if all can be believed, has been working stations galore on his portable set-up. The list was long and correct. Then I noticed the "Who's Who" of Amateur Radio, and the information he has gleaned on his trip would have been very useful to the staff any day he wants one. The salary—Oh a couple of those thoughts that Ve Ed. throws around in the end of the year.

Eric 6VM and family have been over in VKS on one of their periodical visits, and of course have been in the company of Len 5FO and his family. This friendship was formed many years ago, when the two families (four hour QSOs, etc.) and was not lapsed through the years. Eric's XYL Len 5FO is the sister of Len (ex 5VM) from Crystal Brook way, who incidentally, if my spy can be trusted to on the way back to the air. Good news, Len, the more the merrier.

Received the usual seasonal letter from Arch 5JH, a refugee from Norfolk and Lord Howe Islands. He tells me that the notoriety handed out to him since those DX-peditions was being enormous and that the VKs told me that it has not changed him from the quiet unassuming ambassador for c.w. that he has always been. Quiet and unassuming. I hope his tiny writer didn't collapse in a helpless mess as he wrote that. Nevertheless, I will grant him the title of ambassador for c.w. he has done so well in c.w. in VKS than any three s.b. converts put together, and seriously, who would want to put three s.b. converts together! Don't answer that.

Ken 5IM reported as passing through Lucindale over the Xmas period, as was Howard 5XA, but neither have as yet reported seeing any Norfolk Island natives with bones through those islands, although they did report a Lord Howe Island native with a nose through him bone!

Rumour has it that John 5JW has been given a 7 Mc. vhf. set containing c.w. and s.b. If it is true, we welcome him back with open arms after such a long absence.

Vic 5JH also heard from Nhill at times over Xmas, although at the time heard he was in the hospital pouring rain, his spirit unbent and unbroken.

Bob 5BG still recovering from the effects of the bad weather, with his nose and ears rooted VKS recently. He lost all of his aeriels, beams, etc., but it will take more time to this to keep a good one. What he has done is to have his ears let me down badly that was the voice of Harford Scott that I heard under the call sign of 5JO in the vhf. band. I am sure I have heard you since Joe's wedding, Harford. Keeping

well? Dave 5DS, my favourite Scotchman, still in the pink, even though he throws New Year parties that start at midnight and carry on until the wee small hours of the morning. Such frivolity.

Reports are still filtering through of breaking and entering of shacks, and once again opportunities to take the shacks of the gang with outside shacks to keep them under lock and key, or better still, fix up some alarm system and install a burglar alarm. I am sure the shacks are pretty shrewd, he knows his mark and only takes what he wants, so be warned fellows.

Talking of alarms, I heard a beauty the other day from the shack of Jack 5H. He was in QSO with Lionel 5LB and every now and then there would be a bang come over the air that would have done justice to a royal salute. I stuck around long enough to find out the answer, and it appears that in Jack's shack is a big tin with a couple of loose funnels out top of it, and every now and then it contracts or expands and everything in the shack, including Jack, jumps up in the air about six feet or so. I scared Jack and he is half a wake up to it, so what would it do to a would-be-burglar?

By Jack 5H, has been wrongly labelled in these notes for the past two or three months with the call sign of 5LM. I thought he acted cool toward me at a couple of meetings and I decided to write him. Now I am sure that I could not have made the mistake, I am equally sure that the Editor will be happy to accept the correction. Dispenser of unwanted chassis be likely to accept the blame, so once again I will have to be the martyr. I puzzle me. I may not be always right, but I am never wrong. (Two Whites don't make a Wong—Ed.)

The 5WI session on 40 mc has been letting us down a trifle lately. Reception conditions have not been the best. This band and last Sunday, to make matters worse, there was no 80 mc re-broadcast available. One good thing is that the 5WI session has been a good band makes everybody appreciate the voluntary efforts to preserve some, appreciate the efforts to be made to write their notes for one month, just to see what appreciation I would get. Only the thought of the next month's notes will make me happy from all concerned deters me.

Geoff 5ZCQ is now the VKS Federal Council, and will represent us at the coming Convention in Sydney. This band and last year, who represented us in Perth last year, and of course will be the New Divisional President as well as being a 1E.

This month will also see a new Council being voted for and my spies are hinting at some surprise nominations. This is all a bit of a mystery, but I am sure the Division won't get very far and new, enthusiastic and keen members are always wanted.

Just when I was getting all enthusiastic and handing out bouquets to VKs on the quality and quantity of their Divisional notes, what happens? Apparently overcome by modesty and shyness, they have all been handed out, the scribe took off on the padre's bike. Come out, come out, wherever you are, I did not mean it, personally I think the notes were a bit on the nose. How? That? Feel any better?

Radio funny. Joe 5JO made up a portable rig for the Boys' Club. He has been doing it with him on his aforementioned trip round VKS. It outperformed his home rig to such an extent that the Boys' Club could be unlucky! How low is Joe's level?

Jack 5LR is now a gentleman of leisure, with nothing to do and all day to do it in. He resigned from the P.M.G. at the start of this year and tells me that he intends to enjoy life and relax in the sun. He has not had the time to have his rain gear, but I can't say I blame him for giving the game away. To be truthful, I am quite jealous. Good luck to you OM.

Howard 5ZAHM in contact with Ken 5IM! The other evening and believe it or not, Ken was taking credit for the rain that had fallen in the south coast. He was apparently Wentworth. It appears that on the Xmas card he had received from the 2AHM family were written the words "Please send me a card for the rain that has been in the 260 points had fallen for them, Ken was sitting back and endeavouring to take all the credit."

Managed to get to the tail end of a QSO between Frank 5MZ and Jack 5SS and gathered that Jack was off somewhere or other chasing sheep for a few days. Couldn't manage to get any more details, but sincerely hope that Jack will remember to wear a hat and a raincoat. I am sure that the drovers know who are the sheep!

Cec. 5BZ heard on 7 Mc. for a short period the other night, very short in fact, and whether he succeeded in getting into the QSO from the side of the country or not, I don't know. He is preparing to see the country on an extended European tour. Want someone to carry out his baggage?

I suggested to our worthy President (John 5JC) that it would be a good idea if the Divisional frequency menu, at present in my custody, should be sold to the public. SWI (Clive). Frequency checks, if required, have always been given by SWI in the past and I am sure that they would be glad they will be happy to oblige, I hope. Pass the buck, Fanny, they call me!

Never hear anything of Brian 5FQ these days. They were in the hospital when he was off the air, but of course that was when he was a single young man and had plenty of time. No offence meant, Alison! The nearest I have got to hearing him on the air was last Sunday, when out of the transmission of Reg 5RR came a CQ on a motor car horn, and Reg commented, "This was Brian 5FQ, he always toots a CQ on the horn as he goes past."

Ed 5NJ going great guns portable from Port Elliott over the Xmas and New Year break, and puts out a remarkable signal with the low power at his disposal.

I notice with a sense of misgiving, the increased tendency on the part of some contributors to this magazine to belittle the art of s.b., ahem, and feel that apparently they have got to be heard. I am sure that nothing new must automatically be inferior to the existing art of telephony. In an endeavour to stamp out the old mode of wrongful thinking about s.b., I would like to quote what I am at the moment idly thumbing through a technical book published around 1930, and on page 59 I read with some surprise. I quote, "In March 26th, 1928, commercial two-way radio telephone conversation was carried on between the two stations. The method of transmission used was termed a single side-band eliminated-carrier transmitter." Well! What about that? Something new eh? Anybody who thinks the old mode is better than the new must disparaging remarks about duck talk please. Ooops! Incidentally, I never read about anybody advocating s.b., Gercha.

When I was a member of Council we used to sip tea and biscuits at the end of the Council meeting. I don't know where they depart for home. Just what they sip there, I don't know, but my spy, who is planted right in the middle of Council, tells me that the Elizabethan when the acting Chairman, Tubby 5NO, left the lights on his car burning merrily away at the last meeting, and then the car was towed away by the police. The Council, and as far as is known arrived home safely. The chairman (John 5JC) went one better, he managed to get completely lost and arrived home in the early hours of the morning, crept in the back door and retired for his beauty sleep. Next morning the family rose early to go to town for some one buying only to find the lights on the car burning dimly and the battery flat. We will draw a lesson from this, the next time the chairman but this I can say with freedom, the chairman of the VKS Division was ruled out of order early in the piece and that jump on the top of the head when the chairman was ordered to bonged him one when he rose on a point of order! It never even marked the gavel.

It would appear that my lone fight for the permanent secretary's office at the Council office is at last paying dividends. Keith 5LH informed me at the meeting, with an unbecomingly slow smile, that he had been paid his licence fee that day at the Edwardstown Post Office, and the joker never said, "Boo." Well, we will see, I must trust that my mission will be accomplished. I am now for next month's magazine and read either about the victory or the defeat.

Received thousands and thousands, well, hundreds and hundreds, of letters. I tell you have it your own way, several letters over Xmas referring to my humble efforts in this matter. I am sure that you will be saying more, but thanks a lot, I enjoy doing it too, it feeds my ego! I even received a telegram from Mr. MARZ saying, "Merry Xmas. For once for once, I am sure you can they be? 73 de 5FS. Fanny to you."

## TASMANIA

The v.h.f. bands have really hit the headlines in January. It all began when David 7ZAI and Reg 7ZAO worked a VK3 on 2 m. The matter was then taken up by the Council to be followed by 14 VK3 contacts made from



Hobart by Winston Z2WH, formerly Z2AP, who will again be resident in Hobart I believe. This all goes to show that populating these bands can provide some most unexpected results. It is also good to learn that Z2EC, from Eyndale, is able to get through to Hobart mainly on 2 mhz.

John JFJ has erected a G8RV antenna and is now trying it out on all bands, after one trial. It is Saturday. The v.h.f. gang have now received their crystals to land them on 14.1 Mc. and the chin-wagging which now goes on will on a same frequency must be heard to be believed.

Remember the Annual Dinner and General Meeting of the Institute. The date to keep available is Saturday, 23rd March. Bring your W.L. or your friend or mother along and make it the usual wonderful event.

Remember, also, the elections for the new Council. If you are a full member be sure to vote so that the Council of your choice directs our Division's affairs.

At our Feb. meeting, John T2OO delivered a very interesting lecture on pulse modulation, which convinced those present that such a form of modulation on v.h.f. had many points to recommend it, despite the width of the signal. It was very good to see one of our newer members delivering the lecture so ably.

Amongst the new members elected at this meeting was Crc. TCW, or should I say, re-elected. We welcome you back to the fold and hope to see you along often, as well as the other six. Fred, or rather, Fred, has installed his mobile 2 mhz gear in his recently acquired car and is having lots of fun running his intervals. Geoff T2AS is back at work and feeling and looking a lot better after his recent illness.

Our next Federal Convention will soon be upon us and our Feb. meeting passed several items to be included in the Agenda. It was first held in the month of August 1963 from the Northern Zone, and we hope for further examples from the other Zones of interest and activity such as this.

Conditions on the lower frequencies have been variable during Jan. I personally worked a dozen or so Ws during the month on 3.5 Mc., as well as VEs and JAs, but on other occasions the same band was virtually dead with considerable QRN present. 73, T2Z.

**NORTH WESTERN ZONE**  
Terribly sorry for missing the last edition, but an honest mistake was made regarding the publication date.

The first meeting of the year was held on Tuesday 5th, and a good attendance was present. Many old faces, such as TTT were there and we were pleased to welcome visitors, Paul, Bruce, Green, and regularly Alan Boskell. Much business was discussed, including suggested items for the Federal Council agenda, and a future TX hunt, a possible date being 10th March. The controversial letter seems to have been laid to rest at long last. No ill feeling has resulted and much has been achieved by it.

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The meeting was followed by a fine color slide show by courtesy of T2P and T2X. Max, having recently returned from VK3 and VK3, favored us with many colorful mainland shots. Rumour has it that T2S will soon be replacing his queer quack with something special. Unfortunately no more data is available. David seemed in uncommon good humour Tuesday night, although he did seem to be suffering from that now-common ailment, the square-eye disease. I see T2X has recently acquired a phased-array antenna—and not on 2 mhz! Some v.h.f. is coming through 2 mhz and beyond, and T2I seems to be doing fine DX with his "duck-tail". Athol, although officially cleared by the R.L., has been unjustly accused of t.v.i. The T.v.i. Committee have the matter in hand and will no doubt clear the matter up. Sid T2P has a nice black box of auto-tune tricks. No doubt we will soon hear this competition-winner on the air. Keep at the studies Basil, Frank and Bruce. The next exam, I think, is in April. 73, T2ZB.

# HAMADS

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Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received at P.O. Box 36, East Melbourne, C3, Vic. by 8th of the month, and remittance should accompany the advertisement. Call signs are now permitted in Hamads. Dealers' advertisements not accepted in this column.

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**FOR SALE:** Communication Receiver, BC348, 1.5 to 18 mhz, 230v. power supply, £30. VK3AWK, 17 Jasper St., Noble Park, Vic.

**FOR SALE:** Com. Receiver, SX28, £60. 30 watt Mod. Transformer, £4. Three stages with p.p. 6L6 Modulator and Mod. Transformer, £10. Three-band Aegis Coil Kit, Condenser and Dial, £3. Gelo V.f.o. 4/101, £6V output, complete, never used, £76. VK3CB, Phone 26-5300 (Vic.).

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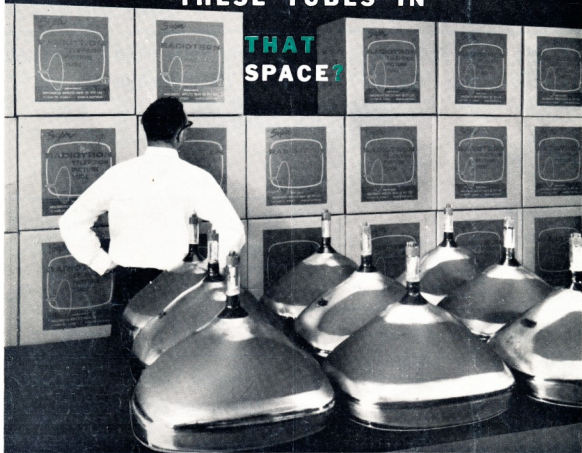


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